

# ..THE IRON AGE..

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MR. TRITLE has been identified with the electrical industry since 1895. He joined the Westinghouse company at the close of the World's Fair at St. Louis, where he was chief of construction. ▲ ▲ ▲

## THE ELECTRICAL INDUSTRY MAY HELP TO LEAD US OUT OF DEPRESSION

By J. S. TRITLE

Vice-president and General Manager,  
Westinghouse Electric & Mfg. Co.



**I**N previous depressions, new industries as a rule have come to the fore and in their expansion and development have so stimulated business that prosperous times were restored to nearly all industrial enterprises. At this time, the electrical industry should be one of the great factors destined to lead us out of the present depression.

It may require a new era in things electrical. At present the United States is far from accepting all the benefits that electrification can bring. Electricity can take just as great strides in the future as it has in the past.

Today in the United States there are 29,000,000 homes of which about 20,000,000 are recorded as being

electrified. It is estimated that there are not more than 1,000,000 truly electrified homes.

The potentialities for domestic consumption of electricity have only partially been uncovered. So many electrical devices are ready for this market which have not been absorbed and electrical research laboratories are promising so many more that here is a domestic load with possibilities that reach far into the future.

To those who see so many of the now common domestic appliances displayed in almost every shop it would seem that the saturation point had long been reached. Yet the electrical iron is the only appliance in universal use. In 1929 about 13,700,000 electric

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**I**t is the electrical industry that will help lead us out of the depression, says Mr. Tritle. There is not the saturation of domestic electrical appliances that is commonly supposed. Here is an estimate of some of the possibilities:

- ☐ Placement of 10,000,000 more electric refrigerators.
- ☐ Latent demand for millions of electric ranges.
- ☐ Electrifying the 90 per cent of the farms not now so served.
- ☐ Much railroad electrification.
- ☐ Plants using as much electricity for heating purposes as for driving motors, as is the case in many plants today.
- ☐ Average home consumption between 3000 and 5000 kwhr. annually instead of 550 kwhr., as it is today.

Not to mention television and the new businesses that will grow up about the vacuum tube and give employment to thousands of workers.

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irons were in service. This amounts to about 75 per cent of all the electric irons that have ever been sold.

It is in supplying the market to a similar extent with other electrical appliances that we may look for a promising future. In 1929 about 1,550,000 electrical refrigerators were in service. There is a conservatively estimated market for 10,000,000 more. Today

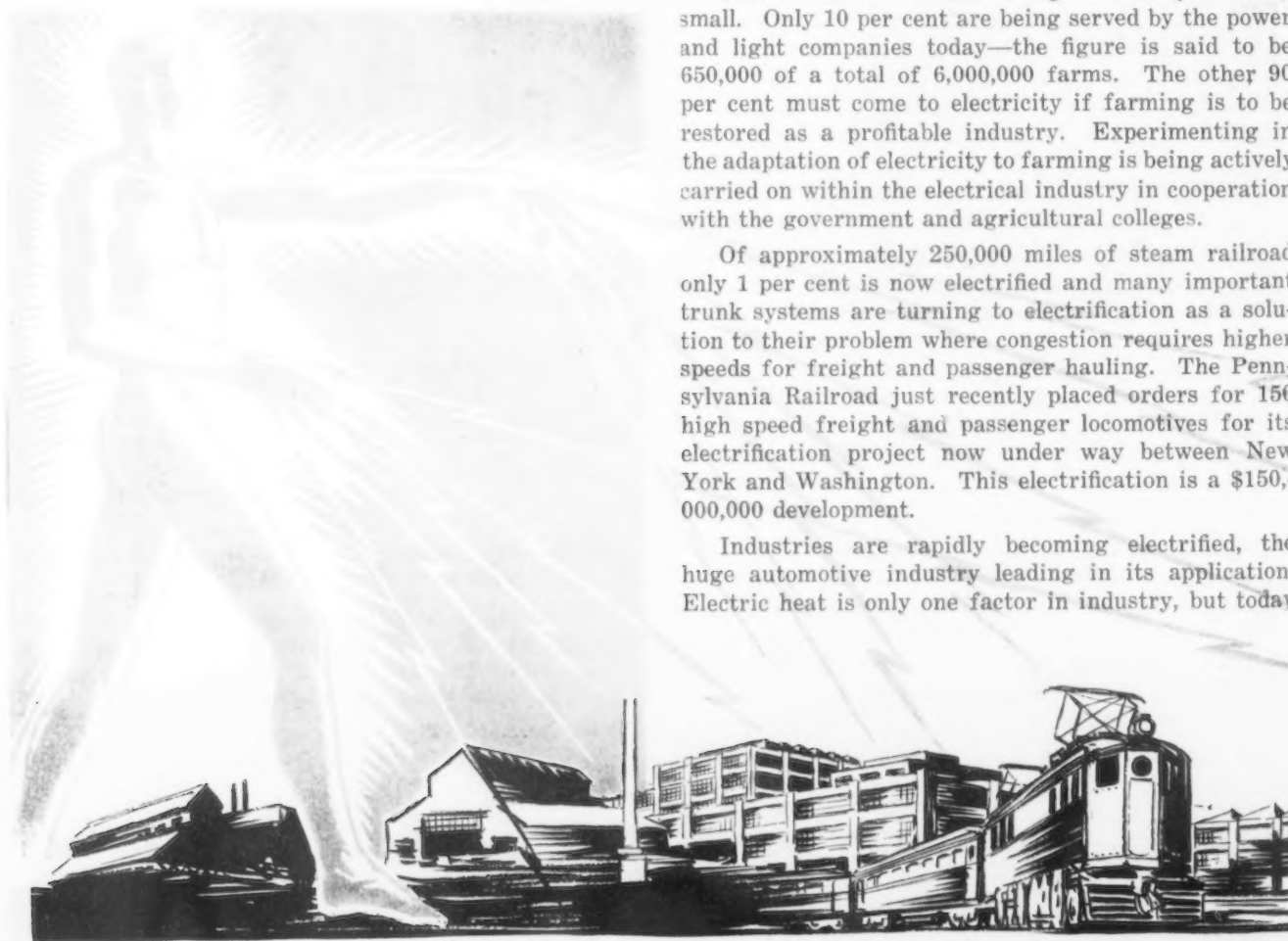
about 740,000 electric ranges have been installed. There is room for millions more. Similar figures available for radios, washing machines, fans, heating units and other appliances are equally interesting.

Possibly thirty billions of dollars must be spent by the domestic market before it can be termed electrified.

The number of farms using electricity is very small. Only 10 per cent are being served by the power and light companies today—the figure is said to be 650,000 of a total of 6,000,000 farms. The other 90 per cent must come to electricity if farming is to be restored as a profitable industry. Experimenting in the adaptation of electricity to farming is being actively carried on within the electrical industry in cooperation with the government and agricultural colleges.

Of approximately 250,000 miles of steam railroad only 1 per cent is now electrified and many important trunk systems are turning to electrification as a solution to their problem where congestion requires higher speeds for freight and passenger hauling. The Pennsylvania Railroad just recently placed orders for 150 high speed freight and passenger locomotives for its electrification project now under way between New York and Washington. This electrification is a \$150,000,000 development.

Industries are rapidly becoming electrified, the huge automotive industry leading in its application. Electric heat is only one factor in industry, but today



many plants use as much electricity for heating purposes as they use in driving motors.

Approximately 91 billion kilowatt-hours of electricity were generated in the United States in 1930. A conservative estimate has been made that 172 billion kilowatt hours will be required in 1940. Today the average home is using 550 kwhr. yearly and yet the potentialities are for an average consumption from 3000 to 5000 kwhr. annually.

The power companies will expend billions of dollars in building systems to meet these forthcoming requirements. The manufacturers who supply the generating and transmission systems and electric products must make large expenditures. The greater part of this wealth will reach the public in the form of wages. Such expansion means prosperity to every industry in the country.

So far I have not mentioned inventions now in the laboratories whose development, as in radio, may mean new industries. In the immediate future we may look to television and vacuum tubes as potential sources of new businesses into which thousands of workers may be absorbed.

Today we stand at a threshold and view this charming vista of tomorrow's electrical progress. How quickly we will pass through the door and what strides will be taken toward attaining it is difficult to prophesy. Indications are that the present depression is prodding this country toward its goal and a more substantial prosperity than it has yet experienced. When this future has been attained it may be our industrial leaders, economists and statesmen will have profited by past experience and so conduct business and society that we may be spared low business cycles, such as the one through which we are now passing.



## Outlines Field of Usefulness of the Rivet

**T**HERE is a distinct technically and economically outlined field for both riveting and welding, and to speak of one process supplanting the other, in the opinion of Pierre Champion, vice-president, Champion Rivet Co., Cleveland, is merely manifesting ignorance of the limitations and possibilities of each process.

He made an extended address on the subject to a conference of building officials at Toronto, April 23. Observations from the address follow:

In the boiler industry, where it has been the practice to rivet and calk, the boiler maker will rivet and then weld around the rivet heads and seams to prevent sweating.

In a building where a considerable amount of truss work is used, welding will serve a definite purpose, but the main supports will be riveted—welding will not supplant riveting.

Some thirty-five years ago we went before the trade introducing the steel rivet. At that time iron rivets were in general use, and so skeptical were the fabricators as to the steel rivet, that we, as a last resort, were forced to offer a dollar for every rivet head that came off. Fortunately for us, we did not have to give many dollar bills away. But even the widespread adoption of the steel rivet has not entirely supplanted the iron rivets, for today in the hulls of our ocean-going vessels iron rivets are used extensively, because of their resistance to corrosion.

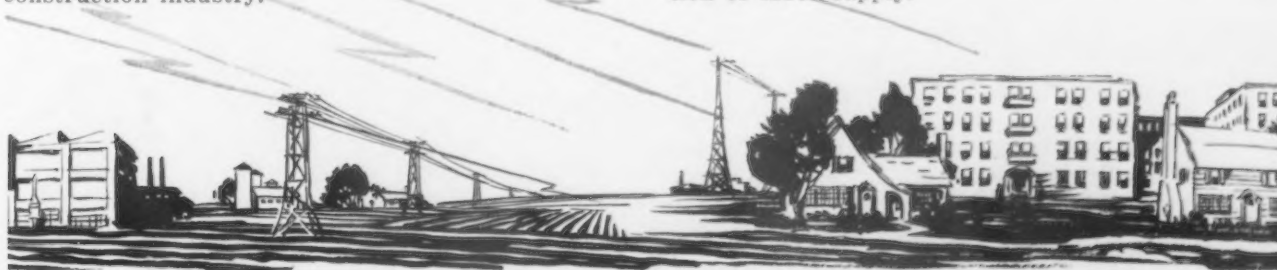
Mr. Champion then took up some of the factors "which will insure for rivets their position in the construction industry."

*Factor of Safety:* It does not occur to us to question the safety of riveted construction. It has been used so extensively that it never occurs to us to doubt its security. The very Pullman cars that brought us here; the bridges we crossed en route; the towering buildings all about us, are evidences of the safety of riveted construction. Riveting is a thoroughly known process. The safety of a rivet can be predetermined by exacting physical and chemical tests. The heat necessary to drive rivets does not deprive them of these essential characteristics.

*Factor of Inspection:* Not only during the course of construction are rivets easily and readily inspected, but in subsequent years wherever rivets are exposed in the structure, as in a bridge for example, they are readily and economically examined in accordance with prescribed periodic inspections.

"We have shipped carloads, yes, even boat loads of rivets, to the West Coast for their pipe line projects," said Mr. Champion, "for use in the face of earthquake hazards, hazards that let the earth fall away from under the pipe and put a tremendous strain on it." He referred to his company's advertisement in *THE IRON AGE*, April 23, illustrating a large penstock used in connection with the Skagit water-power project for Seattle. This provides for a 19½-ft. pipe branching into two 15-ft. pipes, all riveted with the company's Victor brand rivets.

Mr. Champion discussed the subject also under the heads of economy, the time factor and the question of labor supply.





# METAL ROTORS OF AUTOGIRO HINGED FOR STABILITY

By BERAN VON LINDEN LANSDOWNE

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**H**INGING of the blades of the rotor or upper wing of the autogiro is reported to have made it possible to operate this unique aircraft under conditions of stability which previously could not be attained. The blades of the rotor, made of elliptical steel tubing, produce by their rotation an unbalanced force which, without this hinging element, was found to result in considerable instability in flight. Due to the rotation of the rotor, one blade was impinging upon the air at a speed equal to the difference between its rotative movement and the forward movement of the machine, while the blade directly opposite was subjected to the addition of these two speeds, in its relation to the air. This was the factor which had to be overcome in achieving stability.

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**M**UCH the same materials as those used in the construction of conventional aircraft are used in the general construction of the autogiro. The upper wing or rotor, composed of from two to five separate blades, seemed for a time to promise a development outside the metals field. But by the summer of 1930 both American and British engineers, working along different lines, developed all-metal rotor units.

The American blades were constructed on tubular steel spars which had been reinforced against flexibility in the plane of rotation by shrinking elliptical steel tubing over them for about 60 per cent of the distance out from the blade root. The British blades were made without the reinforcing elliptical spar.

Because the rotor system is the essential characteristic of the autogiro and gives it its name, and because this rotor system is the only element of the new plane as yet undescribed technically and metallurgically in THE IRON AGE, we shall give here some idea of it.

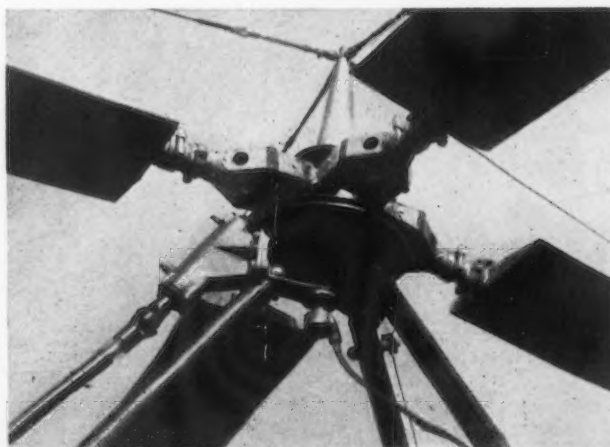
It furnishes approximately 80 per cent of the lift at high forward speed and 100 per cent in vertical descent. It consists of a set of four hinged blades mounted on a hub, which rotates on ball thrust bearings set on a pylon structure above the fuselage. These blades rotate freely under the aerodynamical pressure of the wind produced by the movement of the machine.

The rotor is wholly independent of power from the engine, whose sole function in flight is to propel the autogiro. There can, therefore, be no cessation of rotation while the machine is in the air.

The rotor is designed to revolve about an axis approximately perpendicular to the longitudinal axis of the engine. The speed of rotation for any given sys-

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**A** UNIVERSALLY-JOINTED connection is used to govern the angularity of rotor blade impact upon the air.





**A**UTOGIRO in flight, showing size of rotor with respect to the fuselage and wing-spread.



tem is defined by its design and is practically constant for all flying conditions. The rotational speed of different rotors varies from 120 to 150 r.p.m.

In straight vertical descent the airspeed encountered on all blades is equal. In forward flight, it is obvious that this equality of airspeed is eliminated by a differential of the forward speed, which is added to the velocity of the advancing blade and subtracted from the receding one.

Unless some means were taken to overcome the inequality of lift caused by this difference of airspeed, the machine would tip in relation to the line of flight; its stability would be lost. The simple and ingenious scheme of hinging the blades to the rotating shaft, so that they are free to yield up and down, balances the dissymmetry of lift on diametrically opposed blades and results in complete stability. The advancing blade automatically rises, decreasing its effective angle of incidence, while the receding blade descends, automatically increasing its effective angle of incidence.

This hinging of the blades has the important effect of eliminating most of the bending stresses. The load is carried by a tension system in which centrifugal force provides the necessary restraint, and prevents the blades from rising under the load. This tension

system enables the designer to save much weight and introduce flexibility into the construction of the blades. The flexibility of these blades is an important element of the autogiro characteristics and is rendered possible only by means of their hinging. The hinging or articulation of the blades also eliminates all gyroscopic action of the rotor.

## Foundry Apprenticeship Training

**A**CTING upon a request of the committee on apprentice training of the American Foundrymen's Association, S. M. Brah, apprentice supervisor, Tri-City Manufacturers' Association, Moline, Ill., has made a survey of related instruction being given foundry apprentices in plants and in municipally-conducted training courses. The results of this survey were presented by Mr. Brah in a paper to the American Foundrymen's Association.

Various municipal schools offer extra-curricular activities, such as movies of shop processes, talks on safety and industrial subjects, and visits to various industries, but there is a comparative lack of interest in these activities among plant-operated classes. Experience has proved that these departures from regular class-room routine aid the instructor in holding the interest and broadening the training of apprentices.

In almost every case Mr. Brah's study revealed that the apprentice is paid for attending school. This practice enables the employer to demand regular attendance and to set standards of quality and quantity of work done. In some cases, however, the apprentice is required to pay something toward his schooling, this expense being confined to cost of materials and supplies used in the class room. Among municipally-operated schools there seems to be a reluctance to invite the manufacturer to assist in their administration, an attitude which Mr. Brah considers unfair on account of the employer's responsibility for the apprentice's welfare. Society as a whole has to pay the bill for labor inefficiency, and half-trained or poorly trained workers in any field increase production costs, which, in turn, are passed on to the consumer.

▲ ▲ ▲ **T**HE rotor is mounted on its pylon and stayed by means of wire guys.

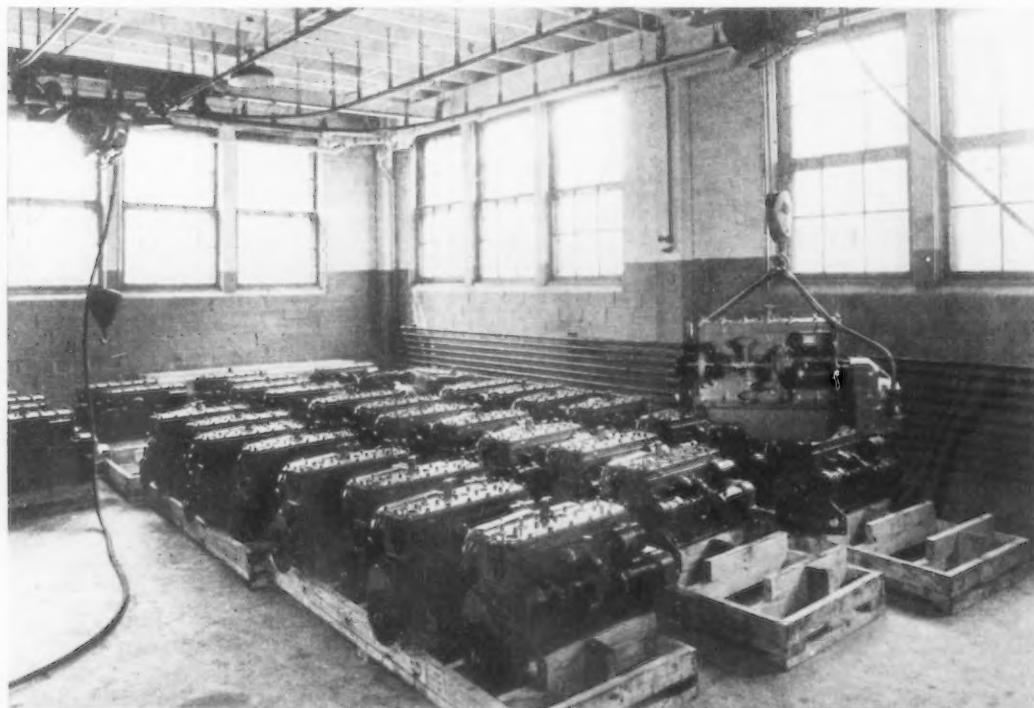


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**A**DAPTING an existing two-story building to its needs, the DeVaux-Hall Motors Corp., at Grand Rapids, Mich., is able to produce 200 cars a day in floor space of about 200 x 270 ft. Straight-line assembly has been abandoned in favor of an oval-shaped line. The modern facilities for cleaning and enameling sheet-metal parts are noteworthy, and conveyors of various types contribute to economical operation. The first "DeVaux six" automobile made at this plant left the assembly line early in April of this year.

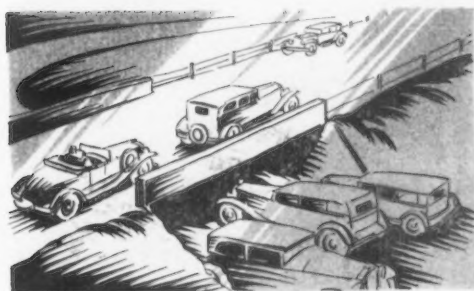
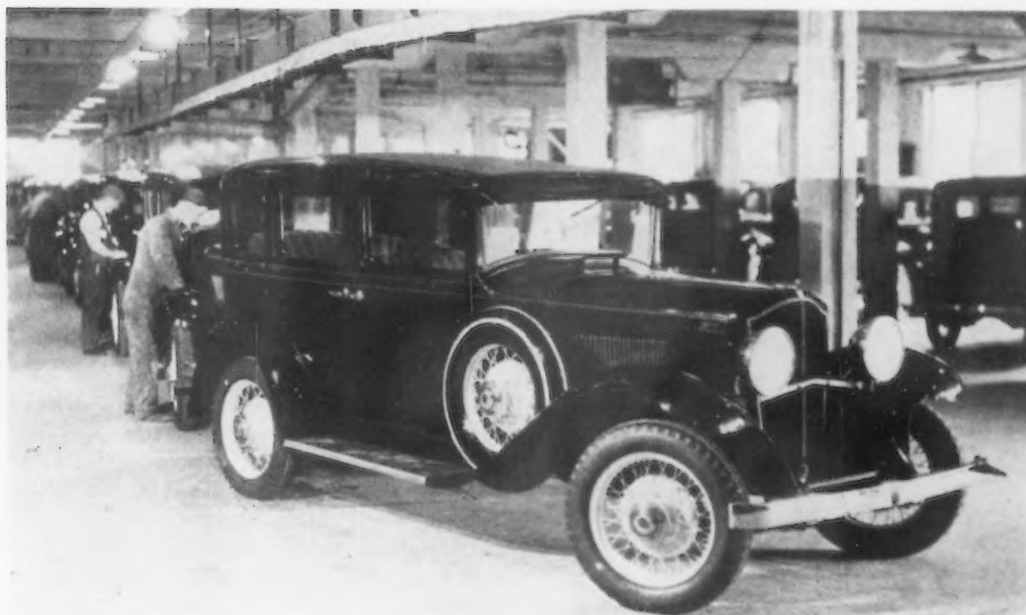
**E**ARLY in April of this year the DeVaux-Hall Motors Corp. began the manufacture of the "DeVaux six" automobile at Grand Rapids, Mich., in a plant adjoining the factory of the Hayes Body Corp. Its chief problem was to adapt an existing two-story building to its production needs. As a consequence it has arranged operations so as to turn out 200 cars a day in a remarkably small floor space, approximately 200 x 270 ft.

Straight-line assembly has been abandoned in favor of an oval-shaped line, the car traveling entirely around the oval in the manufacturing process. The second floor is used for the assembly and finishing of parts, which are lowered through hatchways to the main assembly line on the first floor at the points where they are assembled. In the center of the oval is an areaway, now skylighted, occupied by a stockroom, blacksmith shop and machine shop.



**S**TORAGE space for parts has purposely been reduced to a minimum. The small stock of motors kept on hand is shown.

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**F**INISHED car at end of assembly line ready to be driven away under its own power.  
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Storage space for parts has been purposely reduced to a minimum. In the west wing adjacent to the motor assembly line is kept a stock of 50 to 100 motors, delivered five to a crate by motor truck from a Muskegon, Mich., plant of Continental Motors Corp'n. Other parts are brought in, likewise, in limited quantities. Bodies are transported across a bridge on the second floor from the Hayes body factory to the De-Vaux plant. Small parts are delivered by railroad

or truck to a receiving platform from which they are taken in trucks to bins along the assembly line.

#### Chassis Conveyed In Lengthwise, Rather than Crosswise, Position

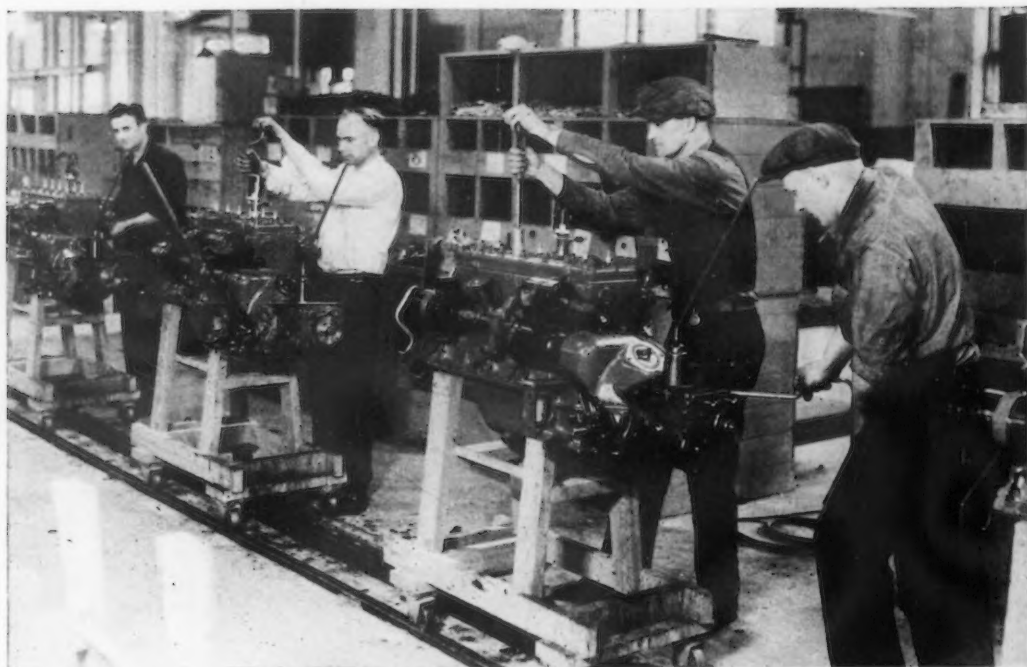
Chassis frames arrive at the plant in carload lots and are moved by truck to the chassis assembly conveyor, where all chassis parts, brake hook-ups and gas tank and line are assembled and preliminary brake adjustments are made. The chassis, carried on a revolving jig, is then turned over and placed on a second conveyor, running parallel to but in reverse direction to the chassis assembly conveyor. Here it is sprayed with enamel and passed through an 80-ft. long baking oven the temperature of which is maintained at 250 deg. F. Both of these conveyors are of the double-roller-chain type and are synchronized as to speed. Contrary to the practice in some automobile plants, the chassis moves along the conveyors in a lengthwise, rather than crosswise, position.

Coming out of the oven, the chassis hesitates di-

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**P**ARTS are stored on special trucks on second floor, where they can be moved instantly to whatever point needed.  
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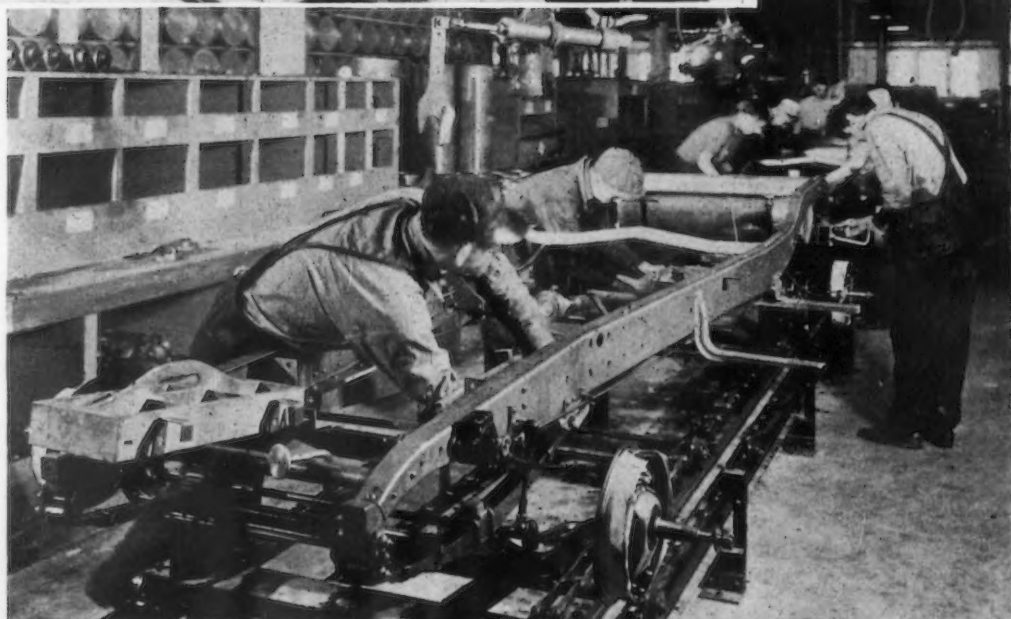




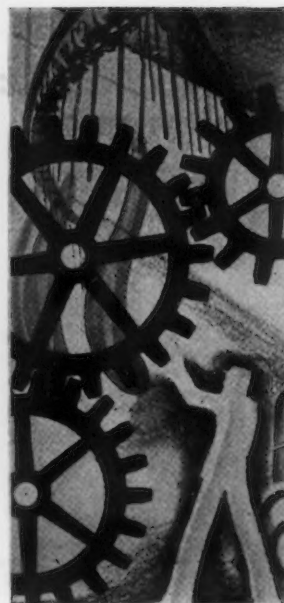
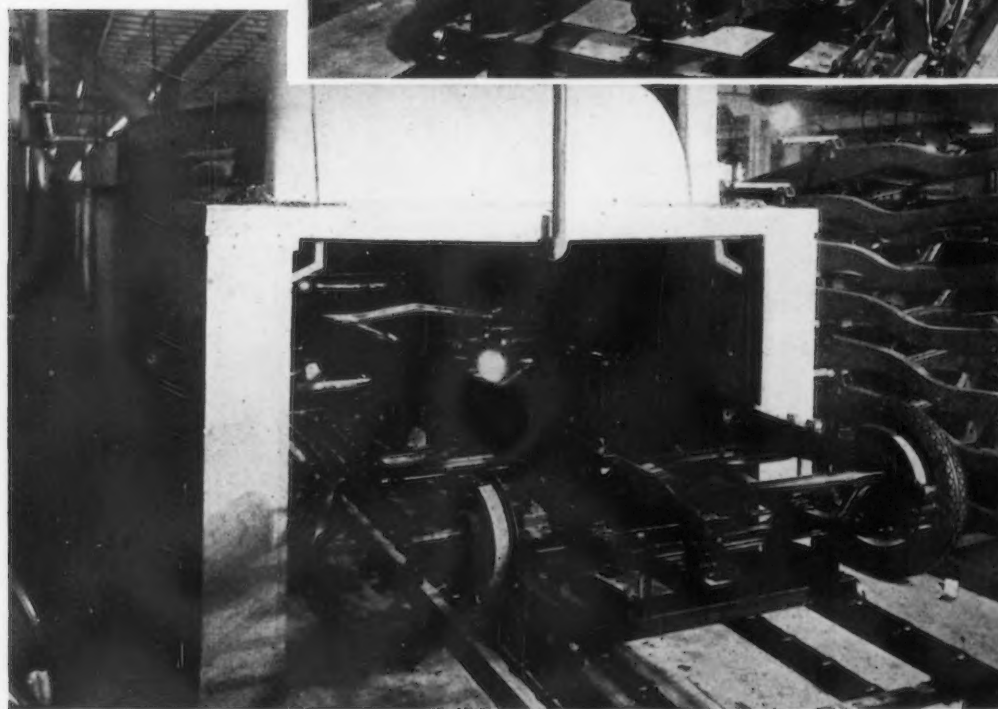
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**MOTORS** move along sub-assembly line (at left) on a wooden truck running on a track and pulled by a drag chain. Note convenient height at which motor is stationed.

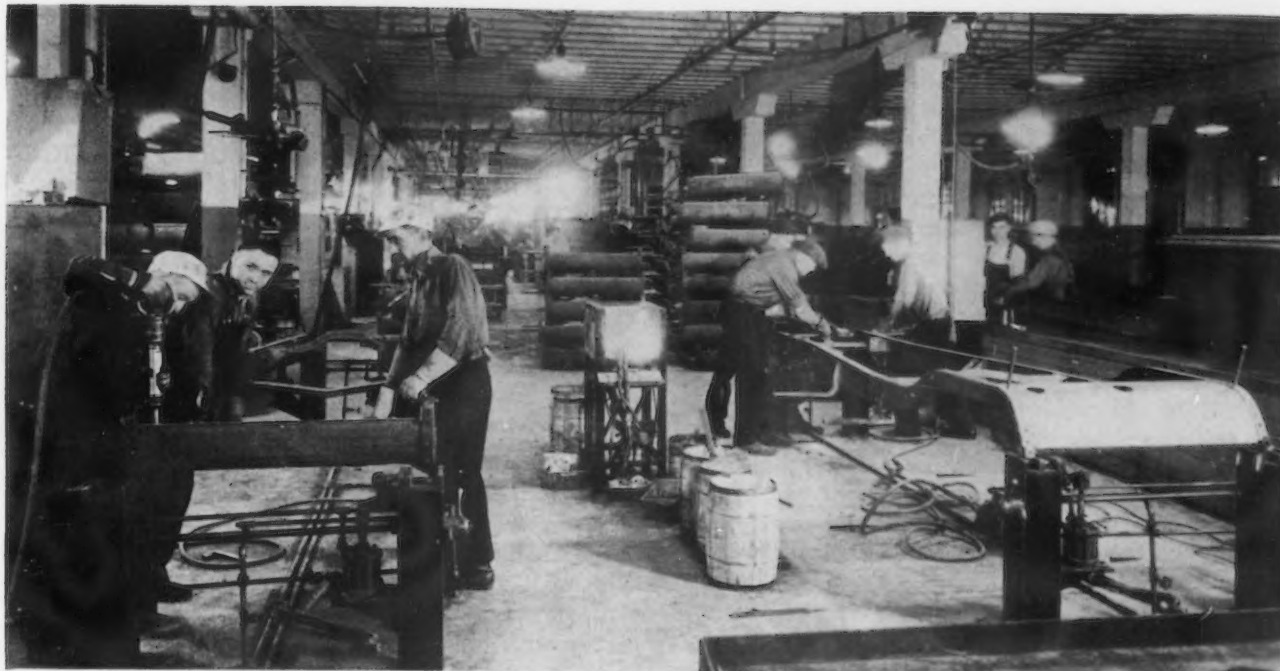


**CHASSIS** parts (at right) are assembled on a double roller chain conveyor. Contrary to practice in some plants, chassis is carried lengthwise rather than crosswise during assembly.



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**CHASSIS** emerging from baking oven, (below) where enamel coating is dried. Here wheels, lowered from second floor, are added.





rectly beneath a hatchway while wheels, painted and supplied with tires, are lowered into proper position from the second floor. After the wheels have been added, the chassis is delivered to drag chain conveyor which travels around three sides of the building, various parts being assembled en route until the unit finally is driven off the end of the conveyor as a finished automobile.

On this journey the chassis first receives the motor, which comes down a sub-assembly line from the southwest end of the building, picking up the clutch, spark plugs, timers, ignition and other parts on the way. Motors en route are stationed on a wooden truck running on a track and pulled by a drag chain.

After the motor is bolted in the chassis, the unit picks up the steering gear, oil lines, cowl, headlights and a complete front fender assembly, which is painted on the second floor and dropped through a hatchway. Next comes the body, which is lowered to the line by means of an air hoist from which are suspended special metal clamps to grasp the body. Finally the rear fenders and bumpers are attached and the car is rigidly inspected. It then is filled with gasoline, oil and water and is driven off the line. An exhaust system has been put over the line at this point, auxiliary exhaust pipes attached to the tail pipe of the car and the fumes drawn out of the building.

After they are received from outside sources, sheet

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**S**UB-ASSEMBLY work on frames (above) is done by cold-press riveting process. Main frame assembly is set up in accurately aligned fixture and all cross members hot riveted into place.

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**B**ODY is lowered to main assembly line by air hoist from which are suspended special metal clamps to grasp the body.





metal parts are washed in gasoline or oleum spirits, dried and blown off with compressed air, inspected for scratches or dents, which are removed by dinging or buffing, and finished with a fine emery cloth. They are then taken on specially designed trucks to a hanging room, where they are cleaned again and wiped.

A single chain monorail overhead conveyor carries the parts through the first coat of enamel, dipping them automatically into the enameling tank, transporting them over the drain boards and into an overhead baking oven located on the roof, where they remain for 40 min. at a temperature of 430 deg.

Coming out of the oven, the conveyor makes a 180-deg. turn and passes through the finish-coat enamel tank, going over the drain boards into a second baking oven, in which it remains for 40 min. at a temperature slightly above 430 deg. At the end of the oven, the chain makes another 180-deg. turn, comes back through the oven and delivers the finished sheet-metal parts at the point where they are installed on the body.

The ovens are heated by direct-fired gas heaters which recirculate the air from the ovens, burning up the fumes thrown out of the ovens by passing them directly through the flames of the heater. The temperature is kept within a range of 5 deg. by means of automatic control equipment. The entire enameling system is protected against fire by a carbon dioxide gas installation which is interconnected with all electrical equipment, automatically shutting down the conveyor, fans and heating units and opening the drop valves in the enamel tanks, thus draining the enamel into large storage tanks on the first floor. The speed of the enameling conveyor, controlled by a Reeves transmission, can be varied from 16 to 48 in. per min.

The new factory has been designed and machinery installed by DeVaux-Hall engineers. In addition to the Grand Rapids plant, the DeVaux-Hall Motors

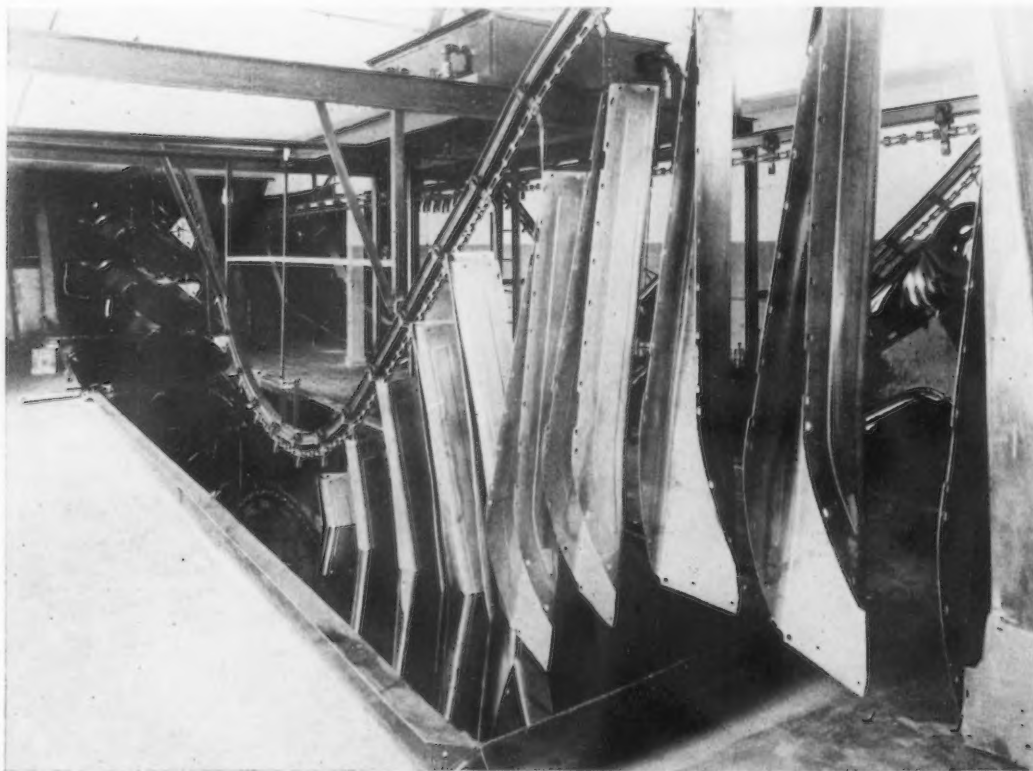
Corpn. is now operating an assembly plant at Oakland, Cal., to serve the Pacific Coast territory, where Norman DeVaux, president, and Col. Elbert G. Hall, vice-president, have concentrated their manufacturing activities in recent years. The "DeVaux six" is powered by a six-cylinder motor designed by Colonel Hall, who was co-designer of the Liberty airplane motor.

## Steel Grit for Sand Blasting

THE article on the use of steel grit for sand blasting discussed in these columns on Jan. 29, by W. J. Sorrow, works manager, P. & F. Corbin, New Britain, Conn., brought forth a monograph on the same subject by Dr. G. H. Zirker, Zehlendorf, Berlin, Germany, covering information published in that country. From this have been taken the following passages:

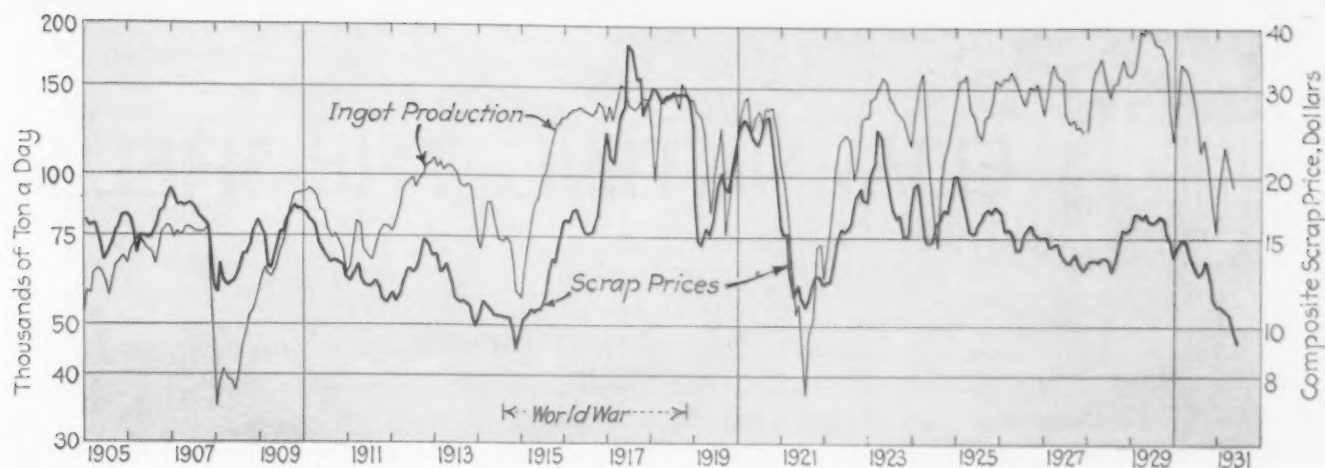
By extensive scientific research, Nettmann & Faber have demonstrated that the efficiency of steel grit as expressed by the ratio of the surface pressure on the work to the nozzle back pressure is about 10 per cent higher with fine-grained steel grit than with quartz or silica sand. This better efficiency, which has been ascertained both for the globular and sharp-edged types, is due to the greater specific weight of the granular steel over the natural sands, and the consequent better utilization of the energy of the compressed air. Air consumption was from 10 to 40 per cent lower with steel grit and shot than with quartz or river sand. The most effective pressure range was found to be between 1 and 3 atmospheres (14 and 40 lb. per sq. in.).

The experience gained in works using steel grit seems to indicate a nozzle bore of 8 to 10 mm. (0.3 to 0.4 in.) to work best. The working pressure is 1.5 to 2.5 atmospheres (20 to 35 lb. per sq. in.) for fine-grained steel grit, and between 3 and 4 atmospheres (40 to 55 lb. per sq. in.) for the coarser grades.



**S**INGLE chain monorail overhead conveyor carries parts through enameling operations, dipping them in enameling tank and taking them through baking oven.





# SCRAP PRICES AS A BAROMETER OF PRODUCTIVE ACTIVITY

By SIDNEY G. KOON

IT has many times been said that prices of steel scrap could be relied upon to foretell, with some degree of certainty, major movements in steel ingot production. In an effort to ascertain how much reliance might be placed upon this form of prognostication, the accompanying diagram has been prepared. This traces the course of THE IRON AGE composite scrap prices (a straight average of No. 1 heavy melting steel at Pittsburgh, Philadelphia and Chicago), from the beginning of 1905 to the middle of 1931. Along with this is the corresponding curve of steel ingot production on the monthly basis over the same period.

Examination of the two curves shows clearly that in a number of important ways scrap has made a turn preceding that of ingot production. There are, however, just enough of the reverse cases to make it doubtful how adequate this barometer might be. A few of the instances might be cited in succeeding paragraphs.

## Specific Instances Cited

SCRAP prices started downward near the close of 1906 and continued that movement, with slight interruption, for a full year. Ingot production, however, did not follow this lead until the latter part of 1907, when the so-called bankers' panic precipitated a crisis. Scrap prices started upward early in 1908 and were followed by production at an interval of about two months. A peak was reached near the end of the year in prices, which then fell

almost as low as they had been a year earlier. Production, however, while it followed the downward movement after an interval of about two months, made only a very minor drop and then resumed the advance, in which it was accompanied by scrap prices.

In the fall of 1909, scrap began a long and irregular price decline which lasted about two and a half years. Ingot production followed after an interval of four months, but with a drop which lasted less than a year.

Right here is where one of the wide divergences occurs. Production, as will be noted from the curves, started a fairly steady rise in the fall of 1911, while prices continued to go down until the early months of 1912, before turning upward in accordance with the movement of ingots. This upward movement was interrupted near the close of 1912 by another decline in scrap prices, lasting about 15 months. It was followed after two or three months by a less precipitate downward movement of production which, in the fall of 1913, became much sharper.

Disregarding the up-and-down movement running through 1914 and reaching a nadir late in the fall, after the first incident of the World War had made itself felt, scrap prices started upward in a movement which was only occasionally and partially interrupted over a period of almost three years, culminating in the summer of 1917, after the United States had entered the war. In this long upward movement,

(Concluded on page 340)

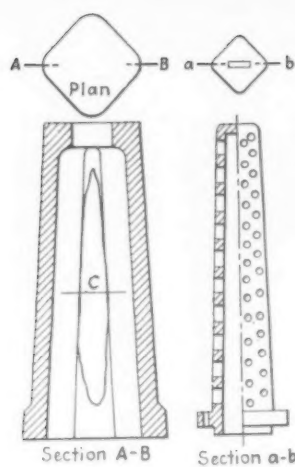


Fig. 1

Fig. 2

**DIAGONAL** sections through ingot mold (left) and proposed core barrel with large venting holes, designed to carry heat quickly away from corners of the mold when cast.

# ELIMINATING THE SHELL

By D. J. THOMAS  
Carmarthenshire, South Wales

**I**N undertaking an investigation into the shell defect in ingot molds, several factors have to be taken into consideration, as no end of theories have from time to time been advanced as to its true cause and cure. Existing literature on the subject is rather scanty and is so erroneous that no reliability may be placed on it.

This defect is certainly very serious, and is a matter which demands constant care and observation from those responsible for mold production. There can be no question that all mold makers have from time to time witnessed this state of affairs, as all classes of molds are subject to this defect, whether they be top or bottom cast, light or heavy molds. This shell defect takes the form of a very thin layer of iron in the form of a light scab; in fact, it is quite identical with a scabbed condition.

## Trouble Lies in the Corners

Very often this shell or scale will be found to run the entire length of the mold and situated always in the four angles or radii, as seen in section Fig. 1 (C). Its size and condition vary considerably. Some days it will not make its appearance at all, while on other days the whole cast will be full of it, varying considerably in size and thickness.

But the queer part about this condition is that it never makes its appearance on the flat surfaces of the mold.

In some cases this shell or scale will detach itself quite easily, while in other cases a considerable amount of chipping and gouging is necessary for its removal, with the consequent result of destroying the whole lineal contour of the four angles of the mold, and producing considerable roughness.

Serious trouble comes from this defect when the shell or scale is found rather deeply embedded in the four angles, as it will commence from a very thin point and will gradually increase in thickness toward the center of its length and, when removed, will leave a serious indentation in the mold.

The underlying causes of this defect have from time to time been ascribed to anything but the true cause. For example, it has been ascribed to dampness or insufficient drying of the cores, to excessive sleeing and blacking, and more so to blacking that has been mixed with strong clay waste.

## Due to Segregation of Phosphide Eutectic

It is the author's contention that, were the above mentioned conditions the cause, the whole mold would scab. The true cause of this shell or scale defect is purely metallurgical. It is due to liquation, that is, the segregation of the phosphide eutectic.

Ingot molds call for a class of irons that will show the minimum of growth, together with heat-resisting qualities. Up to date, hematite (Bessemer) irons hold their own in this sphere. It is thought by many that, as the phosphorus content of hematite irons is so low, segregation is not possible.

It is the inconsistency of the phosphorus content, coupled with the design of the mold, that is responsible for this segregation. The phosphorus content of hematite irons will generally run from 0.065 to as high even as 0.80 per cent.

It is generally accepted that the forces of contraction and expansion will vary greatly in different casts of pig iron, some irons carrying a longer cooling range than others. When an ingot mold has been cast, and as soon as solidification commences, the flat surfaces of the mold will cool much quicker than the four angles, with the result that the expansion will take place quicker from this point, applying a decided pressure toward the angles. This pressure is much increased from the top section of the mold, which in most cases is 50 per cent thicker than the walls.

As the phosphorus is the last element in cast iron to solidify, naturally it is held in suspension longer. Therefore the pressure forces the eutectic into the hottest zone, which in this case are the four corners, and so makes its appearance at the face of the core. Sometimes this eutectic may be seen in the form of small

# DEFECT IN INGOT MOLDS

**R**APID corner cooling for ingot molds when cast is advocated, in the interest of avoiding scale or shell defects. To this end the core is provided at the corners with unusually large vents to carry away the heat. Stress is laid on the importance of using a suitable sand.

shot embedded in the top runners, but never in the bottom runners.

## Getting the Heat Away from Endangered Areas

It is interesting to note that the condition outlined above can be effectively met and eliminated through radiation. Many and varied are the methods that have been employed from time to time. Some mold makers have even resorted to water cooling.

The solution to the whole problem lies in the construction of a properly designed core barrel. This should be made to follow the exact contour of the mold, allowing no more than  $2\frac{1}{2}$  in. of ramming space for sand. This core barrel should be provided with large oval vent-holes, and these vent-holes so positioned that they will be in direct line with the four angles of the mold. See Fig. 2.

Small round holes will be found to be quite suitable to take the vents off the four flat surfaces. The idea of providing large oval openings in the four

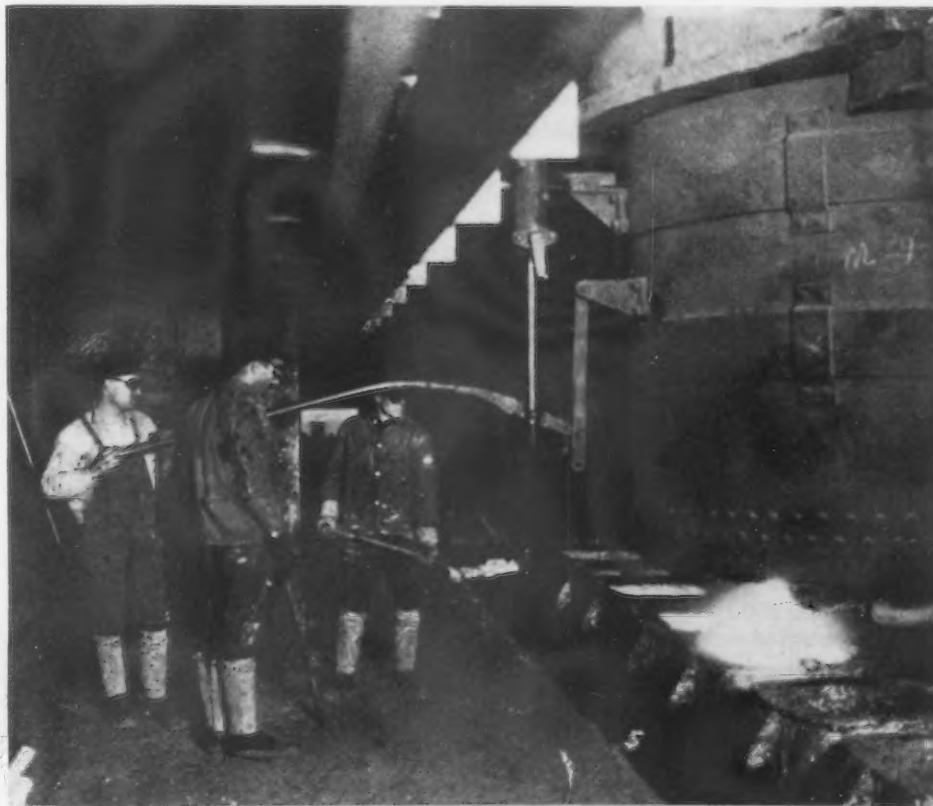
corners of the core barrel is to withdraw the heat quickly and thus equalize solidification. No liquation or segregation will be possible under these conditions.

On the other hand, this type of core barrel is quicker and is 50 per cent cheaper to produce than the conventional round or oval barrel.

Again, it is very important that a suitable sand be used for ramming. Porosity combined with consistent strength should be the rule. If the sand be of a close nature, it should be well opened out by making suitable additions of gravel or sawdust to the mixture. This sand should by no means be passed through a sand mill, as this operation destroys all porosity.

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Safety goggles, leggings and gloves used by steel pourers when teeming liquid steel into ingot molds.





# PREPARATION and DISTRIBUTION

By H. L. MCKINNON

Secretary, C. O. Bartlett & Snow Co.



**M**OLDING sands can be classified as: (a) sands suitable for non-ferrous work, brass, aluminum, etc., (b) sands for light gray iron and malleable castings, (c) sands for heavy gray iron and malleable work, (d) sands for light steel, and (e) sands for heavy steel. Sands for the first class of work must be of small grain size and should have a rather high percentage of clay. This latter need not necessarily be of high refractory content, since the pouring temperatures of these metals have a range of from 1200 to 1800 deg. F. Sands of the second class for light gray iron and malleable castings should have a moderately fine grain with plenty of bonding material to render them firm when rammed. The bonding material should have refractory qualities that will not fuse or break down at temperatures running up to 2600 deg. F.

The class of sand for heavy gray iron and malleable work should be of coarser grain, and mixed with sufficient bonding material of heat-resisting quality to give strength. In other respects it should correspond with class (b).

Sand for cast steel must be a nominally pure silica, and for light castings should have a grain fineness comparable with the class of work. Bonding materials must be added and milled into the sand. These will be treated separately in connection with the process of treating the sand.

The essential difference between classes (e) and (d) should be in size of grain and in the nature of the bonding materials to be added. Preparation of molding sand for use involves the following processes: (1) Screening to free from coke, scrap, hard lumps, etc.; (2) magnetic separation to remove shot, nails, etc.; (3) addition of sufficient new sand or bonding material to keep up bond; (4) addition of water to restore that dried out in molding and handling; (5) thorough mixing of bonding materials, new sand and water; and (6) aeration of sand after mixing.

## Description of Devices for Sand Preparation

The mechanical devices used in these operations are very many, but can be described as follows:

*Screening.* Two distinct types are used with many variations of each. They are: (a) revolving and (b) vibrating. The revolving type has the distinct advantage that it can be used as a breaking device for reducing dry sand lumps and return them into the system without serious loss. These screens may be divided into those externally supported on trunnion rolls and those carried on a set of spiders with a center shaft. There are also some built with trunnion supports on one end and a spider support on the other.

The vibrating types may be classified as those actuated by the reaction from an unbalanced rotating fly-wheel, either in a vertical or horizontal plane and actuating a screen on a flexible mounting; and also a class where the actuating impulse consists of reversing electro-magnetic forces. There are also those actuated by direct mechanical drive.

The advantages of vibrating screens in general are that they require less space and head room, are usually lower in first cost, and housing for dust collection is easier. The disadvantage is that many of them are difficult to maintain in high operation efficiency.

*Magnetic Separation.* It is usual to pass the sand over a short belt conveyor having as one of its end pulleys a magnetically charged pulley. As the sand passes over this pulley, magnetic materials such as nails, gagers, etc., will be carried around the pulley to a point past the delivery point of the sand, in this manner making an effective separation.

*Mixing Equipment.* This is usually accomplished today by means of a machine known as a "pug mill." This is a paddle-type mixer and frequently is a double-shaft machine with mixer blades threaded over a



# OF MOLDING SANDS

square shaft. The mixer blades are usually provided with removable tips and occasionally the machine has a single shaft. Latest-type machines are provided with removable bottoms to the housing for easier cleaning. Mixing may be accomplished in various type mullers and in fact in certain classes of work that is the common method.

*Mulling.* The type of machine used for mulling consists generally of a pan with two or more large rolls rotating over the sand with plows between contacts with the rolls. Many of the machines have revolving pans and the rolls are placed on stationary axles. Others have stationary pans with rolls making a circular path in the pan. Another machine is used which is continuous in operation, and consists of a drum or cylinder with lifting flights and two heavy rolls in the center, revolving at a differential speed as sand is cascaded over the rolls. These rolls are held together with springs to give the required pressure.

## Aeration and Seasoning

*Aeration.* For this purpose a machine of the impact type is used. This has taken many forms and the force of the impact should be varied with the character of the sand handled. Light fine sands require less impact than heavy and coarse sands.

*Seasoning* is a term used to describe the finishing process that takes place when after proper treatment the sand is allowed to rest, allowing the laws of capillary action to operate to the fullest extent. This can be accomplished only with the use of ample finished-sand storage.

The methods outlined have grown out of 20 years of experience in dealing with the proper conditioning of molding sands for a wide variety of castings and also a wide difference in the capacity of the operating forces. Given a well equipped operating personnel, almost any type of equipment can be made to serve the needs, but on the other hand, the best possible machinery may be quite useless if the organization is not able to analyze the problem, and adopt the proper variations for their needs. Hundreds of tests have



**P**ROPER preparation and handling of molding sands is of major importance in foundry practice. Upon these activities depend, to a considerable extent, the quality of the work produced and the profits secured from operations.

In this article, prepared from a paper presented by the author at the last semi-annual meeting of the American Society of Mechanical Engineers, a comprehensive description of apparatus and methods of sand preparation and handling is given. A succeeding article in a later issue of THE IRON AGE will deal with the preparation and handling of core sands.



been made to determine the condition of molding sands in various steps in process. Tests recently made show characteristic results and some photomicrographs indicate with some degree of clarity the reasons for the results.

Stating the conditions broadly, shakeout sand after screening would be good enough to use in making molds in many instances. Where, however, the ratio of metal poured to sand in the mold is low, it is usual to find the sand hot and dry, and frequently with injured bonding material adhering to the sand grains. Manifestly, when such is the case treatment is necessary.

The next logical step is to add water and new bonding material and mix thoroughly. The pug mill is in most general use in iron foundries to accomplish the desired result. Following this operation tests show that the permeability has been reduced and the shear strength considerably increased. Molds can be made with sand in this condition, but on account of low permeability, blowing is likely to follow, and for this reason the aeration principle is applied to the process.

In certain gray iron operations the treatments outlined are insufficient to obtain as smooth a surface in casting as may be desired. Hence a milling operation is introduced between the pug mill and aeration ma-

chine. This permits of the introduction of bond in a more intimate mixture, further increasing the strength and reducing permeability. This latter is increased when sand is later aerated.

One of the notable items that are indicated in connection with the aeration of sand is that one effect of aeration is a distinct drop in moisture content due solely to aeration. For this reason more moisture can be added to the mix if aeration is applied after mixing and milling. This applies to gray iron work and to some extent to brass and aluminum sand as well.

However, for steel foundry work a different treatment is necessary. Steel foundry work divides itself into two classes, green sand work and dry sand work.

#### Green and Dry Sand Preparation in Steel Foundries

The sand problem differs for the two. In green sand work the sand may be reclaimed in much the same manner as for gray iron, that is, by first screening, then mixing and milling, and then conveying to the storage system. For dry sand work the molds when shaken out consist largely of lumps of dry sand and require a reducing process of some kind before being screened. This is accomplished in roll crushers, jaw crushers, pulverizers, and also revolving cylinders with lifting flights causing the lumps to be broken up by impact on one another and on the inside of the shell.

On account of the high temperature at which steel castings are poured, there is more likely to be deterioration of the bonding materials, and, further, certain bonding materials used in steel molding sands are of themselves easily destroyed, and it becomes desirable if not actually necessary, to remove certain fine particles in the sand. This is today most generally accomplished by suction on the sand in the screening operation resulting in removal of the finer particles which reduce the effectiveness of the sand.

#### Sand Handling and Distribution

The principles to be followed in the distribution of prepared and unprepared sands in the foundry involve the knowledge of the condition of the sand for each step in the process. It is primarily a transportation problem, and as such calls for study of local conditions.

A little study will show that the problem of handling sand as it comes from a carwheel mold, in a continuous system where the sand-to-metal ratio may be not more than 1.75 to 1, is a very different problem from that involved in a mold containing 10 to 12 times the weight of sand as there is of metal. In the latter

case, the sand may not be raised in temperature above 180 to 200 deg. F., while in the former case the temperature of the sand may easily reach 550 to 600 deg. F. Again, a mold of the same kind as the first may be allowed to cool over night before shaking out,

producing lumpy dry sand against moist and easily friable sand if the second condition obtained. Further, there may be a condition where gaggers and nails are used in abundance, producing another problem. It is probable that, if a sufficient quantity of sand is involved, from a transportation standpoint, the most economical means is the modern belt conveyor.

However, this fails if sand at high temperature is involved, or if miscellaneous gaggers, nails, etc., have to be drawn from the shakeout. It is frequently true that under difficult conditions the apron or pan type is much more economical in actual operation. After the sand is cooled and screened the belt type is much better on account of the ease of handling and lower first cost for equipment.

#### Circumstances Determine Types Preferred

In addition to the types named the reciprocating-flight type can be used to handle and cool hot sand, provided it is reasonably free from gaggers, sprues and large pieces of metal. The plain-flight conveyor is also used to advantage in some cases.

For elevating sand the bucket elevator is in general use, and the buckets mounted on belts are usually considered more economical than on chain. Elevators should not be used in handling sand from shakeout unless there is at least a magnetic separator in the line before reaching the elevator. Elevators can be used to advantage in the handling of prepared sand provided the mixture is not too sticky. For sticky sands it is much better practice to use inclined belts to obtain the necessary elevation in distributing systems.

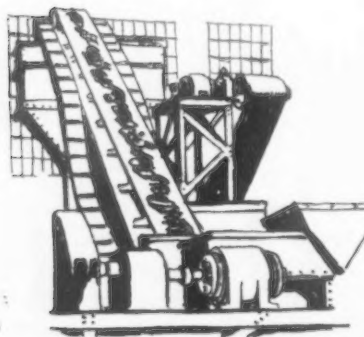
Where actual distribution is to be considered along horizontal runs, there are practically only two types in use—the flat-belt conveyor and the flight conveyor.

The maintenance cost of the belt conveyor is normally lower than for the flight conveyor, but it is usually easy to offset this with reduced attention, as the flight conveyor can be arranged so as automatically to keep hoppers filled, while this process is quite complicated in the case of belt conveyor plows.

These conveyors are of the continuous type. Where small quantities are involved distribution is sometimes made by lift trucks, dump cars or other means. Monorail carriers are used in a number of modern plants for the distribution of facing sand. The flight conveyor described in the foregoing is used sometimes with a double trough, that is, one trough to carry backing sand, while the return strand in another trough handles facing sand. This has proved quite economical and is growing in favor with thoughtful engineers.

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Sling chains are discussed in a book issued by the American Chain Co., Inc., Bridgeport, Conn. In addition to specification tables, it gives definitions, cautions and instructions governing the purchase and use of chain. On the back cover, for handy reference, is printed a chart which shows the safe working loads of iron sling chains when used at various angles.





# CALCULATION OF THE ROLLS OF BENDING MACHINES

By RENE TILKIN

Liège, Belgium

**A** METHOD of calculating the rolls of bending machines, where these rolls are supported at two ends and have also a central support midway between the ends, is worked out in this article. The object is to design rolls which will have the least deformation and thus will give the desired results in the bent plates. Account is taken of the deflection of the roll itself and the effects of backing-up or counter rolls.

**I**T is possible to utilize the method of calculation and the formulas published in the Aug. 29, 1929, issue of THE IRON AGE to determine the best dimensions to give the parts of bending roll equipment in which the bottom rolls are supported in the middle. The reason for this type of plant is to decrease the diameter of the bottom rolls and thus to reduce their cost, while diminishing their deflection as much as possible, to obtain better work.

In this case, indeed, each bottom roll is a beam supported on three points. Inspection of the formulas of deflection and resistance show that this disposition will very much decrease the unit stress and the deflection. However, this disposition is profitable only for great length of rolls, and it remains to be determined at what ratio of length to thickness of plate it is utilizable.

To obtain good results from this design it is not sufficient to place the support of bottom rolls on a foundation, more or less good, often isolated, of blocks, which support the frames bearing the rolls and which, sooner or later, with the pressure on the supports, will settle. It is necessary that the rolls be supported by one beam which shall be supported by the frame bearings, and that this beam be calculated for work under determined conditions. These rational conditions are described as follows:

1. *Deflection of rolls.* If we suppose the support point at *B* (constituted by counter rolls) of the right line which joins *A* to *C* (Fig. 1), the sum of the deflections of the upper roll and of the bottom roll in middle of *AB* must be equal to the deflection of upper roll at point *B*.

2. *Deflection of beam which supports the counter rolls.* The deflection *e* (Fig. 2) must be that which will give to the bottom rolls the greatest strength.

It is known that a beam uniformly loaded and having three supports will have its carrying strength *P* increased to a maximum if the middle support is depressed a determined amount below the end supports. The formula which gives the best amount of depression is:

$$e = \frac{0.0131 P l^3}{EI}$$

In which: *e* is the amount of depression,

*P* the force acting on the half-length of the beam,

*l* the distance between supports *A* and *B*, or *B* and *C*,

*E* the modulus of elasticity of the metal of the rolls,

*I* the moment of inertia of the beam (which is the bottom roll, in our case).

Under these conditions the deflection of bottom roll between the points *A* and *B* or *B* and *C* will be slightly increased, but the unit working stress of the metal of the roll will be decreased.

3. *The distance between axes of the bottom rolls* will be determined by the following method:

It has been shown, for bending rolls without counter rolls, that the smallest circle we can bend has for diameter  $1\frac{1}{2}$  times the diameter of the upper roll. On the other hand, the distance between their axes is  $1\frac{1}{2}$  times the diameter of the bottom rolls, and the points of contact of these with the plate are apart a distance of 0.945 of that diameter. The top roll has

a diameter  $D = 1.136$  times that of the lower rolls, and the distance between contacts is  $0.83D$ . Thus the rolls must be designed to have this distance between the points of contact.

It may be assumed that the machines will have counter rolls only when the ratio between length and thickness of the plate (being bent) is greater than 109. All calculations will be so made for deflection. Finally, all notations utilized in the preceding article will be used, with the same significance, as follows:

Diameter of the bottom rolls	$d$ (inches)
Diameter of the upper roll	$D$ (inches)
Thickness of the plates to be rolled	$E$ (inches)
Moment of inertia of the bottom rolls	$i$
Moment of inertia of the upper roll	$I$
Stress in the bottom rolls	$r$ (lb. per sq. in.)
Stress in the upper roll	$R$ (lb. per sq. in.)
Length of the rolls (this length being supposed equal to the width of the greatest plate)	$L$ (inches)
Bending force applied to each bottom roll	$f$ (pounds)
Bending force applied to the upper roll	$F$ (pounds)

### Calculation of Rolls

**Upper Roll.** If we retain the method given in the first article and the formulas we have derived, we can determine the diameter of upper roll with one equation of terms similar to those utilized for the investigation of the diameter of the bottom rolls.

Indeed  $D = 1.136 d$ ; thus  $\log D = \log 1.136 + \log d$

Equation (13) of the first article is

$$\log d = \frac{3 \log L + 2 \log e - 0.76}{5}$$

From this,

$$\log D = \log 1.136 + \frac{3 \log L + 2 \log e - 0.76}{5}$$

Whence,

$$\log D = \frac{3 \log L + 2 \log e - 0.48}{5} \quad (1)$$

### Ratio Between the Forces Applied Upon the Rolls

If we replace the diameter ratio  $\alpha$  by its value 1.136 in equation (2) of the first article:

$$\frac{F}{f} = \frac{2\sqrt{0.5625 \times (1.136)^2 + 0.75 \times 1.136 - 0.3125}}{0.5 + 0.75 \times 1.136}$$

$$\text{or, } \frac{F}{f} = 1.644 \text{ and } f = 0.608 F$$

and on the half of the length of the bottom roll  $f = 0.304 F$

### Deflection of the Upper Roll

At the middle of the upper roll this deflection must equal the deflection per unit length multiplied by the length, or

$$\frac{0.012L}{12} = 0.001L = \frac{5FL^3}{384EI} \text{ (general formula)}$$

At the middle of length  $AB$  the deflection is equal to

$$\frac{FL^3}{100EI}$$

### Deflection of the Bottom Rolls

By the first condition assumed, the deflection at the middle of length  $AB$  must be

$$\left(\frac{5}{384} - \frac{1}{100}\right) \frac{FL^3}{EI} = \frac{FL^3}{266EI} \quad (2)$$

### Ratio between the Diameters of the Rolls

Equating formula (2) and the ordinary formulas of

the deflection of one beam supported at three points and uniformly loaded along its entire length:

$$\frac{FL^3}{266EI} = \frac{f\left(\frac{L}{2}\right)^3}{185Ei}$$

or,

$$\frac{FL^3}{266EI} = \frac{0.304 FL^3}{8 \times 185Ei}$$

from which:

$$\frac{I}{i} = 18.3 \text{ and as } I = \frac{\pi D^4}{64} \text{ and } i = \frac{\pi d^4}{64}$$

$$D = 2.07 d \text{ or } d = 0.483 D$$

in which  $d$  is the diameter of the bottom rolls supported at three points and  $D$  the diameter of the upper roll supported at each end. Thus the ratio between the diameters of upper and bottom rolls is a constant, which may be called  $\beta$ , and the value of  $\beta$  is 2.07.

Finally, if the ratio between the length and the thickness of the plate is  $\frac{L}{E} > 109$ , the diameter  $D$  of the upper



FIG. 1—Showing the relation between a roll spanning the entire distance without support and one supported at the middle.

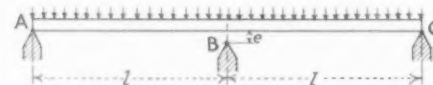


FIG. 2—Indicating the relation of the deflection  $e$  to the distance between end supports and its relation to the middle support.

roll will be determined by equation (1), and the bottom roll will have a diameter,  $d = 0.483D$ .

### Distance between the Bottom Rolls

In the previous case the distance between the bottom rolls was found from the fact that the distance  $x$  between contact points (Fig. 3) is

$$0.945d, \text{ from which, } 0.945 \left(\frac{D}{1.136}\right) = 0.83 D$$

$$\text{Thus } 1.5 d = 1.32 D.$$

$$\text{On the other hand, in Fig. 3, } a = \frac{D}{1.136 \times 2} = 0.44 D \text{ and } b = \frac{0.483 D}{2} = 0.2415 D.$$

$$\text{Also, } c = \frac{1.32 D}{2} - 0.83 D = 0.245 D.$$

$$\text{Whence, } \frac{0.44 D}{0.245 D} = \frac{0.2415 D}{m}$$

$$\text{From which the projected distance between the axes, } m = \frac{0.2415 D \times 0.245 D}{0.44 D} = 0.134 D.$$

$$\text{But } D = 2.07 d; \text{ thus } m = 0.277 d.$$

$$\text{And the distance } y \text{ between bottom rolls} = 0.83 D + 0.268 D = 1.098 D \text{ or } 2.27 d.$$

### Ratio of Stresses in the Rolls

Formula (10) in the first article can be transformed into:

$$R = \frac{158,100 d}{L} = \frac{158,100 D}{1.136 L} = \frac{139,200 D}{L} \quad (3)$$

On the other hand,

$$\frac{FL}{8} = \frac{3.14 D^3 R}{32} \text{ and } \frac{f L}{8} = \frac{3.14 (d)^3 r}{32}$$

$$\text{But } f = 0.304 F \text{ and } d = 0.483 D.$$

$$\text{Thus, } \frac{0.304 FL}{2.8} = \frac{3.14 (0.483 D)^3 r}{32}$$

$$\text{And finally } \frac{R}{r} = 0.742 \text{ and } r = 1.35 R, \text{ where } r \text{ is the stress in the bottom rolls.}$$

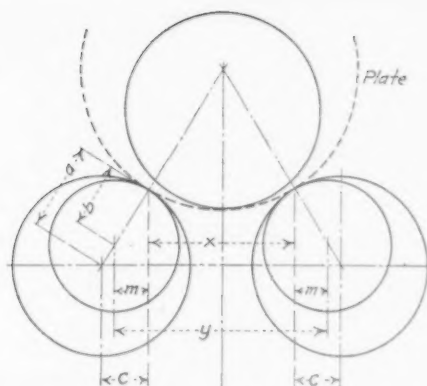


FIG. 3—Characteristics of the rolls as set up to bend a plate.

#### Limit of the Use of the Formulas

It is always the bottom rolls which sustain the greatest unit stress. For them not to exceed 17,000 lb. to the square inch, the limiting ratio may be found between width and thickness of the plate for which it is possible to utilize the design with counter rolls, when the rolls are calculated for their deflection.

In equation (3)  $R = \frac{139,200D}{L}$  replace  $R$  by its value

$$\frac{r}{1.35} \text{ and } D \text{ by } \frac{d}{0.483},$$

$$\text{giving } R = \frac{139,200 \times 1.35d}{0.483L} = \frac{389,000d}{L}$$

$$\text{Whence, } \frac{L}{d} = \frac{389,000}{R}$$

$$\text{for } R = 17,000, \frac{L}{d} = 22.9$$

It happens that formula (1) of the present article can be written  $D^3 = 0.33 L^3 e^2$ .

Replacing  $D$  by  $\frac{d}{0.483}$  this becomes  $\left(\frac{d}{0.483}\right)^3 = 0.33 L^3 e^2$  or,  $(d)^3 = 0.00863 L^3 e^2$

Dividing the two members by  $L^3$ , we have

$$\frac{d^3}{L^3} = 0.00863 \frac{e^2}{L^2}$$

Reciprocals of these two members are  $\frac{L^3}{d^3} = \frac{116L^2}{e^2}$

$$\text{Thus } 116 \frac{L^3}{e^2} = (22.9)^3 = 5,900,000 \text{ and}$$

$$\frac{L}{e} = \sqrt{\frac{5,900,000}{116}} = 226.$$

That is, only for  $L \geq 226$  may the formulas be utilized for the study of the diameter of bottom rolls.

Note that the deflection of the support beam carrying the counter rolls decreases the stress upon the bottom rolls; thus this ratio  $\frac{L}{e} = 226$  is even more excessive. This method is the more admissible, as it is often difficult to design the support beam at exactly those dimensions which will give just the calculated deflection,  $e = \frac{0.0131 PL^3}{EI}$

#### Calculation of Support Beam

CAST steel, cast iron or built-up I-beams are employed for the fabrication of this beam. In case of choice of cast iron or cast steel, the form of equal-strength solid is the better for appearance, but this design will not reduce the weight of the support, because the main section will be greater than with one

of uniform section. For those who must have a fixed deflection, but with the equal-strength solid, the formulas of deflection give twice the value of those of uniform-section solid. Also, the weight of beam is approximately the same in the two cases.

In any case, it is necessary that the beam shall be fixed to the frames so that the analyzed loads applied to the bottom rolls may be entirely balanced. On the other hand, the designer cannot rely upon the foundation of the machine to absorb the reactions of the stresses. It must then be asked if his machine will be able to work in the allotted space; for example, attached to the hook of a traveling crane.

For calculation of the support beam we may assume the disposition shown in Fig. 4. Here each bottom roll is supported by a beam A. The two beams are tied together by a bar B. The total load  $F$  on the upper roll is translated into two loads  $f$  on the bottom rolls. Each bottom roll is supported at three points; thus the uniformly distributed load may be so adjusted that the reactions are  $0.625 f$  on the middle roll support, and  $0.1875 f$  on each spindle or roll neck.

Only the load of  $0.625 f$  is active on the beam. This is divided into two components  $f_1$  and  $f_2$ . The value of  $f_1$  is obviously  $0.625 \frac{F}{2}$ . The beam A supports the load  $f_1$  and the bar B the load  $f_2$ . These last parts are easy to ascertain.

To determine, first, the dimensions of the beam A. The bottom roll will have a deflection equal to  $e = \frac{0.0131 PL^3}{EI}$

$EI$

(see beginning of this article).

In this equation:

$P$  is equal to  $f$  or  $0.304 F$

$l$  is the distance between the middle and one spindle of the bottom rolls, or  $\frac{L}{2}$

$E$  is the modulus of elasticity of the metal of the bottom roll.

$I$  is the moment of inertia of the bottom roll.

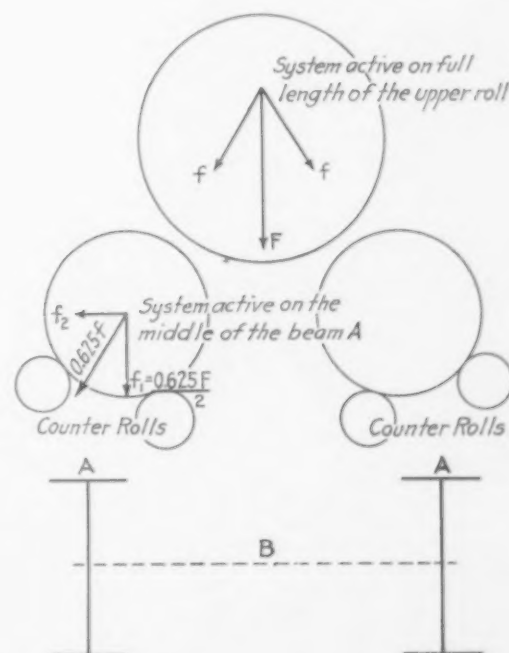


FIG. 4—Analysis of the forces involved in bending a plate between rolls.



The value of  $e$  being known, the section of the beam may be determined in the following manner:

The general formula of deflection for this beam is  $f = \frac{P'L^3}{48E'I}$ , in which  $P'$  is  $0.625 \frac{F}{2} = 0.3175 F$ ;  $L$  is the length of the plate being bent and of the beam;  $E'$  is the modulus of elasticity of the metal of the beam;  $I'$  is the moment of inertia of the beam section.

We must multiply  $e$  by  $\cos \beta$  to have the vertical component of the displacement  $e$ . Angle  $\beta$  is comprised between the vertical and the direction of the force  $f$ . This angle is a constant, 33 deg. 40 min.

Thus  $\cos \beta = 0.83228$  (see Fig. 1 of the first article).

$$\text{Thus } I_1 = \frac{0.3125 F L^3}{48 E' \times 0.83228 e} = \frac{0.3125 F L^3}{40 E' e}$$

This value is good for a uniform cross-section of beam. It must be doubled for a form of equal strength. But it is not easy to determine the dimensions of any section which has a given moment of inertia, and in which the maximum permissible unit stress is touched.

Here is a way to solve this problem:

$$\text{The general formula } \frac{PL}{4} = \frac{I}{u} R \text{ gives } PL = \frac{4I}{u} R.$$

$$\text{The general formula of deflection is } \frac{PL^3}{48EI} = \frac{PLL^2}{48EI}$$

and to replace  $PL$  it becomes  $\frac{4RL^2}{48Eu}$ .

But  $u$  is approximately equal to  $\frac{l}{h}$  ( $h$  = height of the beam); from which the deflection is  $\frac{RL^2}{6Eh}$ .

To return to our problem, the deflection is  $0.83228e$ .

Thus  $h$  must be equal to  $\frac{R'L^2}{4.99 E'e}$ , where  $R'$  is the maximum unit stress permissible in the beam.

This value of  $h$  is good for a uniform cross-section of beam, but must be doubled for one beam of equal strength.

Example: For a plate of 1 in. thickness, 20 ft. or 240 in. long, the calculation is:

$$\log D = \frac{3 \log 240 \times 2 \log 1 - 0.483}{5} = \frac{3 \times 2.38 + 0 - 0.483}{5} = 1.332$$

Thus  $D = 21.5$  in. and  $d' = 0.483 D = 10.4$  in.

The distance between bottom rolls is  $1.098 D = 23.6$  in.

$$\text{Stress in the rolls: } R = \frac{139,200 \times 21.5}{240} = 12,450 \text{ lb. to the square inch.}$$

$$R' = 1.35 R = 16,800 \text{ lb. to the square inch.}$$

#### Support Beam of Cast Steel

Assume  $R' = 7000$  lb. to the square inch and  $E' = 30,500,000$  for the beam,  $E = 29,000,000$  for the bottom roll, maximum stress in plate being 45,000 lb. to the square inch.

In the first article we found that  $x = 0.944 d = 0.944$

$$\frac{D}{1.136} = 0.832 D.$$

Solving for  $F$ , we have

$$\frac{F \times 0.832 D}{4} = \frac{240 \times 1}{6} \times 45,000, \text{ from which } F = 402,000 \text{ lb.}$$

$$e = \frac{0.0131 \times 0.304 \times 402,000 \times 1,728,000}{29,000,000 \times 572} = 0.1668 \text{ in.}$$

$$\text{Thus } I_1 = \frac{0.3125 \times 402,000 \times 13,824,000}{40 \times 30,500,000 \times 0.1668} = 8,550$$

$$h = \frac{7,000 \times 576,000}{4.99 \times 30,500,000 \times 0.1668} = 15.9 \text{ in.}$$

Here  $h$  and  $I_1$  are for uniform cross-section.

## Aluminum in the "Blue Bird" Racing Automobile

THE famous racing car, the "Blue Bird," in which Capt. Malcolm Campbell on Feb. 5 set the world's speed record for automobiles at 245.730 miles an hour, carried a considerable amount of aluminum and light aluminum alloys. The alloy steels used were listed in the issue of April 16, page 1280. The aluminum parts are listed below:

**Napier Engine:** Pistons of forged "Y" alloy; crankcase of 2L5 alloy; carburetor body of R. R. 50 alloy; camshaft covers of R. R. 50 alloy; impeller forging of R. R. 56 alloy; and rear cover of light alloy.

**Chassis:** Rear axle center casing, brake shoes, steering gear columns and castings and wheel disks.

**Body:** Panelling—over 600 sq. ft. of sheet aluminum.

The alloys named above are described as follows, including certain claims:

**"Y" alloy:** Composition: Copper 4 per cent, nickel 2 per cent, magnesium  $1\frac{1}{2}$  per cent, balance commercial aluminum. Tensile strength of heat-treated forgings 50,000 lb. per sq. in. (minimum), elongation 15 per cent (minimum), Brinell hardness 100. This is one of the best aluminum alloys for maintenance of strength at elevated temperatures.

**"2L5" alloy:** This is a sand-casting alloy, the number being that of the British Engineering Standards specification. Composition: Zinc  $13\frac{1}{2}$  per cent, copper 2½ per cent; balance commercial aluminum. Tensile strength, sand in cast form, 25,000 to 30,000 lb. per sq. in., with Brinell hardness 70. This alloy loses strength rather unduly at elevated temperatures, but is still much used for crankcases, oil-pans and gear-cases in Europe, owing to its comparatively high strength without heat treatment, and its excellent machinability.

**R. R. 50 alloy:** A protected alloy developed by Rolls-Royce. Composition: Copper 1.3 per cent, nickel 1.3 per

cent, magnesium, 0.1 per cent, iron 1 per cent, silicon 2.2 per cent, titanium, 0.1 per cent; remainder commercial aluminum. Tensile strength of sand castings after artificial aging 25,000 lb. per sq. in. (minimum), Brinell hardness, 70. This alloy has exceptional freedom from hot-shortness, and therefore castings can be relied on to be free from cracks. It also has excellent maintenance of strength at elevated temperatures. It is now being quite widely used by British aircraft engine manufacturers for engine castings.

**R. R. 56 alloy:** Another of the protected Rolls-Royce series, this being a forging alloy. Composition: Copper 2 per cent nickel 1.3 per cent, magnesium 0.8 per cent, iron 1.4 per cent, silicon, 0.7 per cent, titanium 0.1 per cent; remainder commercial aluminum. Tensile strength of fully heat-treated forging 60,000 lb. per sq. in. (minimum, with grain), elongation 10 per cent (minimum, with grain), Brinell hardness about 140. This alloy has easier forging properties than other high-strength aluminum alloys combined with a strength equal to or better than others, and a higher hardness.

## Safety in Metal Fabricating Shops

A survey of accidents in representative companies engaged in structural and sheet metal fabrication has been published by the National Safety Council, 20 North Wacker Drive, Chicago, in a pamphlet No. Me 3. The survey finds that there is a specific group of hazards in the structural and sheet metal industry because of the size and shape of the materials handled, the use of hand tools, the use of certain special machine tools and the extensive use of autogenous welding and cutting. The pamphlet includes specific instructions for reducing accidents covering protective clothing, such as proper shoes, gloves and goggles for welders, and the safest methods of handling various types of work.

# FULFILLED PROMISES BUILD FOUNDRY BUSINESS

By ROGERS A. FISKE



**S**TUDY of customers' requirements as well as proof of desire to serve contribute to success.



HAVING shipped 25 per cent more weight in castings in 1930 than in 1929, the operators of the Troy Brass & Aluminum Foundry, Inc., Chicago, are not willing to admit that last year was so bad as general business statistics appear to prove. This foundry has been operating since 1925 and each year has attained a new peak in volume of business. This record has been established, not by paring down quality, labor wage scales and by cutting below general market prices, but by careful observance of market conditions and buyers' needs and by the adoption of practices that have proved their worth under competitive conditions.

The Troy foundry was started in July, 1925, with 5000 sq. ft. of floor space. F. L. Sparks and B. Chelini were the partners in the undertaking, which was incorporated in 1926. In April, 1930, the company moved to new quarters, where 12,600 sq. ft. of floor space is in use. Equipment consists of 14 oil-fired furnaces, eight molding machines, 10 tubs and four benches. Sixteen men are normally employed and the capacity of the foundry is 8 tons of non-ferrous metals, all of which is cast in sand.

The men on the floor are carefully selected with the idea that the best skill available is needed. When a man proves his worth he is considered a permanent fixture and deliberate efforts are made to hold him. Recently when other foundries cut wages an average of 13½ per cent, the Troy foundry put into effect a 9 per cent cut. The result is that most of the men who started with the company are still on the payroll. One man has been on the same class of work for five years.

Management rests with the two men who started together in 1925. They are both skilled foundrymen and they jointly study and follow customers' needs and desires. Little effort has been made to seek business at great distance. The partners seek and follow inquiries, as well as keep in touch with customers as work flows through the foundry. This can be done quite readily for the reason that this foundry

is strategically located in a district where there are numerous users of miscellaneous non-ferrous castings. There has grown up a spirit of intimacy, so to speak, with customers, such as is calculated to establish confidence between buyer and seller. Credits can be relatively closely watched under the conditions, and losses on uncollectible accounts have been very small.

Service at this foundry means strict compliance with promises. Quite often a buyer caught in the mesh of hand-to-mouth buying wants service measured by a few hours. A small truck or motor car is dispatched for the pattern on a verbal promise that castings made of any non-ferrous metal will be delivered in 3 hr.

Experience has taught that a seller cannot afford to be independent in either good or bad times. Misrepresentation of quality or the failure to keep promises leads to dissatisfaction, which is an entering wedge for a competitor. Also the longer that a foundry does a purchaser's work, thereby becoming thoroughly acquainted with practices and patterns, the better it can serve and the easier it is to get a fair premium for quality and service.

The seller quite frequently overlooks the cost of obtaining a new customer. Sometimes it may actually cost money to hold a customer, as when doing an odd job or starting a new one, but in many cases it pays in the end because a customer know-

ing or finding he is buying quality and service is quite certain to pay a profit in the long run.

Prices quoted fluctuate with the non-ferrous metal market. The foundry operators watch the market and when there is a change, they immediately notify the castings buyers, who thereby are not given an opportunity to register a complaint as to casting prices. Agreements to furnish castings are usually oral to supply needs from month to month, with prices based on the metal market.

The results obtained are shown by the fact that 1926 sales in dollars topped the 1925 volume by 32 per cent. Both 1927 and 1928 also showed increases. In 1929 sales were 85 per cent more than in 1925 and the 1930 dollar volume (84 per cent gain over 1925) was practically equal to sales in 1929. The non-ferrous metal market broke sharply in 1930, but wages were not reduced until 1931. Since selling price is prorated on metal cost the slight drop in dollar sales shown for 1930 does not throw the correct light on the picture, for the reason that the tonnage of sales actually increased in 1930 compared with 1929. Therefore 1930 like each preceding year showed a substantial increase in the tonnage of castings sold.



Manufacturers and users of chemicals are putting their railroad equipment in order, as indicated by the large number of special freight cars now undergoing repairs. The General American Tank Car Corp., Chicago, reports exceptional activity during the past three months at its 10 repair plants in various parts of the United States.



A State land grant has been issued to the American Sheet & Tin Plate Co. at Gary, Ind., for thirty-six acres of reclaimed land on the Lake Michigan waterfront. It was signed by the Governor and Secretary of State. The company paid \$979 for the land, the price being fixed by State law.

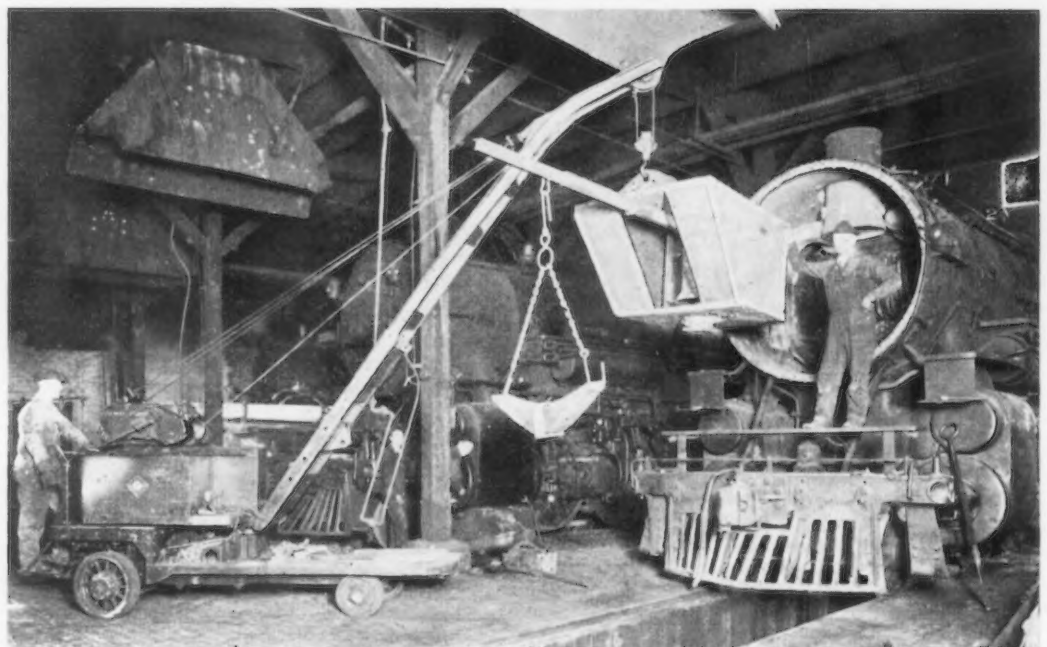


## Cutting Costs by Electric Truck Transportation

(ABOVE)

**A**N articulated truck with tilting platform used by manufacturers of steel sheet and consumers of it, such as automobile body builders. A 40-ton car can be loaded by one man in 25 min. with no danger to the material or the workmen.

▲ ▲ ▲

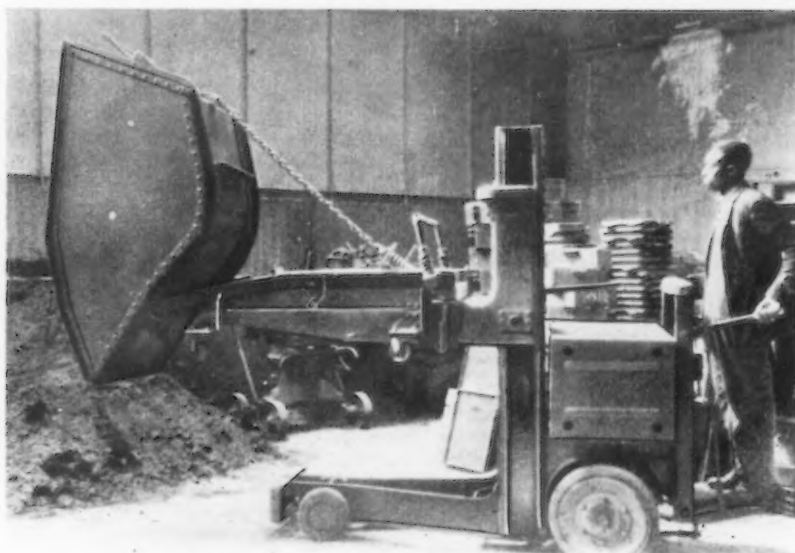


(ABOVE)

**E**LECTRIC crane trucks have found wide applications in locomotive repair shops. This machine at the Chicago shops of the Chicago Northwestern Railroad performs many operations in a fraction of the time required by hand. These machines may be used in the assembly of large machines to save the time of overhead cranes for handling the heavier pieces.

◆ ◆ ◆

(AT LEFT)



**E**LECTRIC truck at the Ohio Pattern Works & Foundry Co., Cincinnati, carries brick and sand with dump body attachment shown, moves molten metal (with different attachment) from furnaces to molding floors, loads street trucks and all other moving where hand labor would be slow, dangerous and expensive. The machine has saved \$4,400 a year for the four years it has been in service.



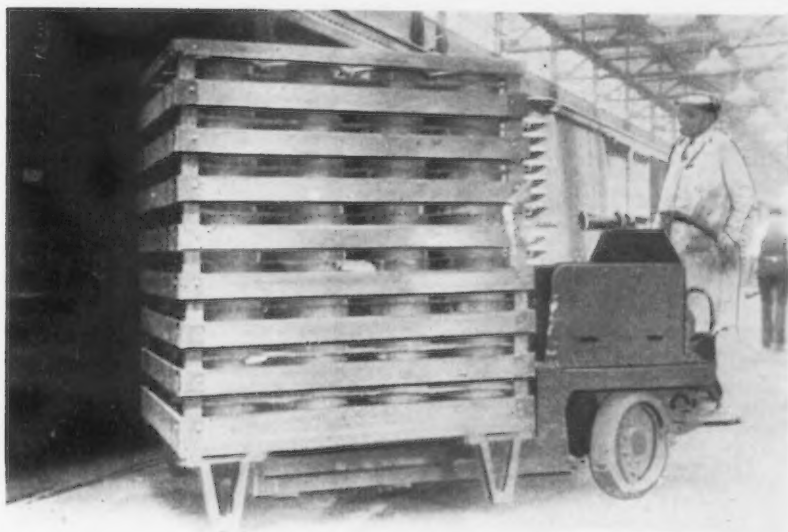
(AT RIGHT)

THE Sharon Steel Hoop Co. uses five electric tractors and 150 special 10-ton trailers for handling hot and cold strip. This system replaced an industrial railway system at a saving of 40 per cent of the former cost.



(AT LEFT)

THE Bendix Brake Co. ships automobile brakes in skid racks as shown. One man with a truck loads a car in 30 min., two other men secure the load in 45 min. more. The total cost including the cost of the skids, their back haul, etc., is \$32.16 for 3840 brakes as compared with \$126.50 for 2400 brakes under the old method, a reduction of 84 per cent in the handling cost.



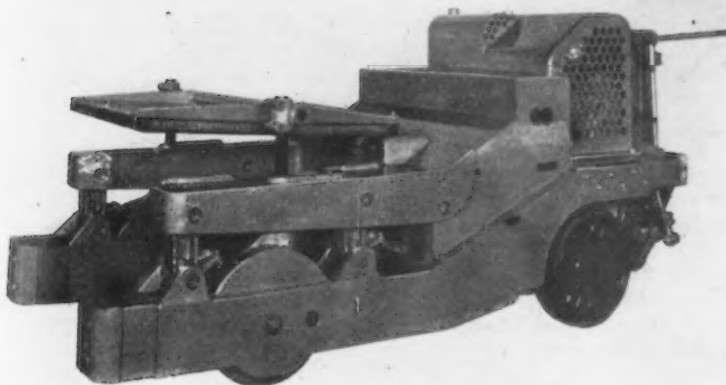
(AT RIGHT)

DETROIT Edison Co. uses this 5-ton truck for handling all types of material at its warehouse and salvage yard. The picture shows the loading of reclaimed wire where the machine reduced the cost from \$39.75 a car to \$4.20. Similar savings were made in the handling of lead billets, baled paper, cable and other supplies. Operating costs for maintenance, repairs and power house averaged 49c. per day for the last two years.



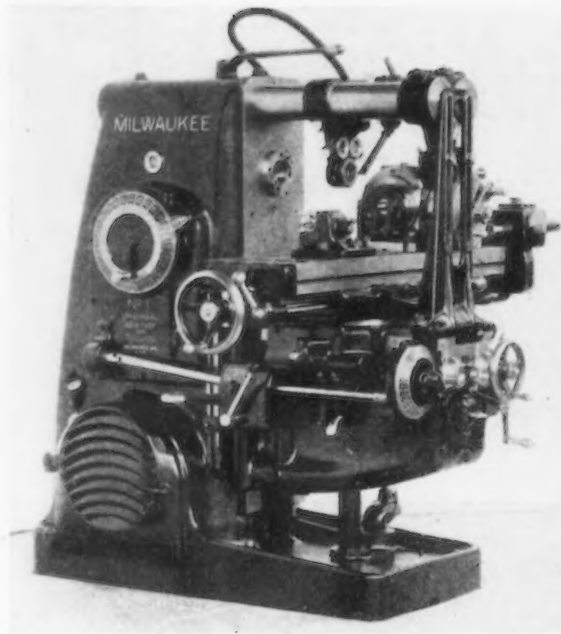
(AT LEFT)

A SPECIAL truck of 10-ton capacity for handling bosh tanks in tin mills. The truck straddles the tank and the two arms lift to engage lug angles on the side of the tank. The tank is lifted until the top engages the cover plate thus preventing the spilling of liquid during transit. One of these machines saved the operation of an overhead crane with operator and two helpers.



# New "Milwaukee" Knee-Type Millers Embody Many Features

IN addition to the universal milling machine, plain, manufacturing and sliding head vertical types are built.



**G**REATLY broadened range of spindle speeds, from 15 to 1500 r.p.m.; feeds from  $\frac{1}{4}$  to 60 in. per min.; center-bearing spindle with worm drive; "sponson-type" knee; stabilized column; and multiple V-belt drive with the motor set at right angles to the spindle are outstanding features of the new series of "Milwaukee" knee-type milling machines, Nos. 1 and 2, recently announced by the Kearney & Trecker Corp., Milwaukee. The machines are suitable for use with tungsten and tantalum-carbide milling cutters.

Of interest also is a new dividing head, in which the customary worm and wormwheel mechanism has been replaced with a precision hypoid spiral bevel gear and pinion. It is intended to permit the cutting of short

leads by power and to make possible many other operations.

The milling machines are available in two sizes, designated as Nos. 1 and 2, each of which is offered as follows: horizontal types in three models—universal, plain and manufacturing; sliding-head vertical types in two models—plain and manufacturing.

## 100 to 1 Spindle Speed Range

The speed range from 15 to 1500 r.p.m. permits surface speeds in either direction as low as 50 ft. per min. for a  $12\frac{1}{2}$ -in. diameter cutter, and as much faster as may be desired, depending upon the material and nature of the work. With the higher speed ranges, 100 ft. per min. can be obtained with a  $\frac{1}{4}$ -in. cutter. Large gaps between increments are avoided by 27 speed changes in geometrical progression. A single speed-selecting lever is rotated clockwise for higher, and counter-clockwise for lower rates. The speed obtained is indicated on an easy-reading dial.

To provide high speeds and slow heavy-duty torque rotation in the same spindle, the 27 speeds have been divided into three series of nine each. The nine highest speeds are obtained through a hardened, ground and polished worm on the spindle, driven by a chilled, cast-bronze wormwheel. Although the spindle revolves as fast as 1500 r.p.m., no other shaft or gear in the entire spindle train runs faster than 600 r.p.m.

The nine intermediate

speeds are obtained through a hardened steel spur gear in combination with a large heavy-duty bull gear for the nine lowest speeds. The bull gear acts as a flywheel. The drive is through multiple-splined keys cut solid on the spindle. The sliding gears that mate with the intermediate and bull gears are in neutral position when the high-speed worm drive is in action.

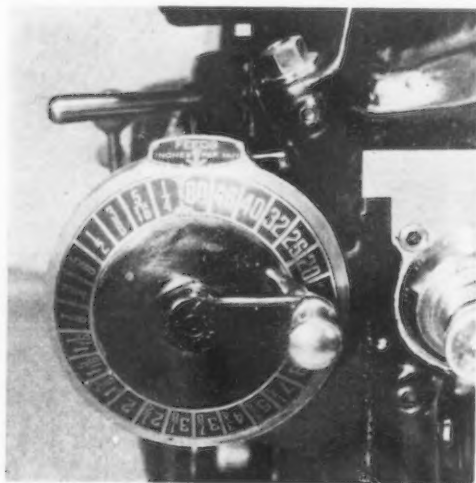
## Center-Bearing Spindle

The spindle is mounted on three anti-friction bearings, spaced at approximately equal distances apart, an arrangement intended to add stiffness without undue load on the bearings themselves. The bearings are spaced far enough apart to permit endwise expansion to relieve radial expansion. The front and center bearings take both radial and thrust loads; the rear bearing, of straight roller type, takes radial load only.

A well-ribbed double wall plate in the column carries the driving train, the gears being supported between the two walls on short shafts carrying multiple splines and mounted on anti-friction bearings.

Limitations of a narrow range of feeds have been overcome by the new range of  $\frac{1}{4}$  to 60 in. per min., with 27 changes in geometrical progression. A lever and quick-reading dial for adjusting the feed are accessible from the operator's position. As in the case of the speed control, one turn of the handle revolves the dial  $\frac{1}{27}$ th of a revolution and steps the feed up or down one increment. The exact rate of speed in use may be seen at a distance of 20 or 30 feet from the machine.

Resembling an H-type box building



Feeds from  $\frac{1}{4}$  to 60 in. a minute in 27 changes are selected by means of this lever and easy-reading dial. A similar lever and dial provides for 27 spindle speeds from 15 to 1500 r.p.m.

column, the knee of the machine is provided with wide and heavy ways, closed box section walls and heavy projections in the form of "sponsons" on each side at the bottom. A long bearing on the column face, extending to the top of the saddle, further increases the stability of the structure. A convenient handle serves to lock knee and column solidly together. The inclosed construction of the knee makes flood lubrication possible for the gears and bearings within.

By providing the saddle with a large center rib extending into a channel on the top of the knee, the height from the top of the knee to the top of the table is reduced. Furthermore, this construction makes possible a long, narrow guide that assures accurate alinement. The saddle is locked to the knee by a single conveniently-located handle.

The plain milling machine is the same as the universal except for the saddle, which does not swivel. The manufacturing type is a simplified plain milling machine in which the speed and feed changes are by means of pick-off gears. There are 24 speed changes providing the same range of 15 to 1500 r.p.m. as the quick-change mechanism. Eight pick-off gears permit 24 changes of feed from  $\frac{1}{4}$  to 60 in. per min.

#### Hinged Arbor Support

To facilitate set-up operations, the center arbor support is hinged in two halves, each bored to fit over one overarm and accurately locked together as one piece. This construction permits removal of the arbor with gang cutters intact by swinging each half of the hinged arbor support around its respective overarm. In this way the spacing of gang cutters is not

disturbed. The front bearing is like former designs except for an oil reservoir that makes the adjustable bushing self-lubricating.

Mounting of the motor at right angles to the spindle makes both ends accessible and strengthens the column. Adjusting screws and a pivoted motor bracket permit regulating the tension of the multiple V-belts that connect the motor with the driving pulley located on the side of the column. This pulley is of fan construction designed to draw air through louvers for cooling the motor.

Rapid power traverse in six directions is provided at speeds of 150 in. per min. for the longitudinal travel of the table, and 75 in. per min. for the knee and saddle. As a safety measure, when the rapid traverse is being used to run the work up to the cutter, the table dog releases the clutch and the feed is then re-engaged with the reverse lever.

#### Duplicate Controls Facilitate Machine Operation

No effort has been spared to locate the operating handles so that they will be in a natural position for the operator, and at the same time to overcome the possibility of grasping the wrong handle. For this reason, each handle is made in a different shape or from a different material. The starting lever is directly in the center of the machine at the top of the column and can be adjusted to any location for convenient operation, either from the front or rear of the table at either side of the machine.



Duplicate feed and rapid traverse levers permit control of these motions from either front or rear of table.

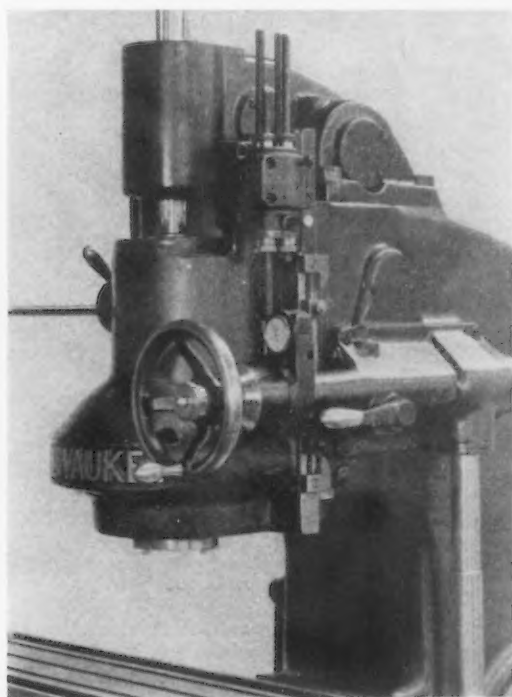
The new sliding head vertical machine is furnished either plain, with 27 speeds and feeds through quick-change mechanism, or as a manufacturing type machine with pick-off gears for 24 speeds and feeds. Silent worm gear drive for high spindle speeds and heavy bull gear for low speeds are the same as on the new horizontals. The head has a 6-in. vertical travel and can be furnished with power feed and rapid traverse to the sliding head with the full range of 27 feeds from  $\frac{1}{8}$  to 30 in. per min. Adjustable blocks are provided to trip the feed or rapid traverse at any desired point within its range.

Step milling is facilitated by a four-step dial indicator precision stop. Assuming that there are three or four heights to be milled in accurate relation to each other, the slide is permitted to go up by rapid traverse to a height determined by one of the trip blocks. It is then run down by the rapid traverse and is tripped out by one of the screws on the precision stop. The handwheel is then used to lower the head a few thousandths to the zero point on the dial.

Automatic flooded lubrication for gears, shafts and the entire internal mechanism is provided. Coolant distributor pipes are equipped with ball and socket joints to facilitate quick adjustment. Both oil and coolant reservoirs are located in the base.

#### Dividing Head Provides for 40,000 Leads

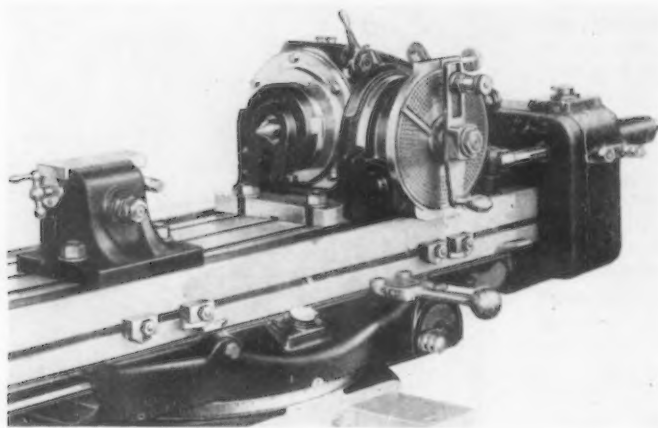
A new dividing head, said to be a radical departure from preceding design, employs a pair of accurately mated hypoid spiral bevel gears as its primary dividing mechanism. The gear and pinion have a ratio of 5 to 1. The index plate, unusually large in diameter, is made double, two pieces be-



**C**LOSE-UP of the sliding-head on the vertical milling machine showing four-step dial indicator precision stop for step milling. The handwheel provides for manual adjustment of the spindle slide.

**T**HE illustration at the top of the page shows the multiple V-belt drive from the motor mounted in the column base. The fan-type sheave draws air for cooling through the louvers in the door.





NEW hypoid geared dividing head for more than 40,000 leads from 38 threads per in. to more than 240 ft. per turn.

ing fastened back to back to permit the holes to be through-reamed. The 5 to 1 ratio between the pinion and gear makes for quick indexing on small numbers, which constitutes the greater part of toolroom work.

Leads ranging from 38 threads per in. to more than 240 ft. per turn can be milled. Three sets of pick-off reversible worms and gears in the change mechanism provide for more than 40,000 leads. This is accomplished by means of a spiral lead gearbox which bolts to the end of the table and can be removed when not needed. The mechanism in this box can be driven either from a shaft which parallels the table screw, or from the table screw itself.

No side pressure is placed on the dividing head spindle during clamping, which is accomplished through a self-compensating clamp ring on the large diameter of the hypoid spiral gear. The usual graduations are provided and the spindle can be set at any desired angle from 10 deg. below horizontal to 10 deg. beyond the vertical. The flange on the front end of the head spindle is the same size as the standardized end of the milling machine spindle, and it has the same standardized taper hole as the main spindle of the machine.

The chuck is held by three bolts that pass through the entire length of the spindle. The head center collet, which carries the dog driver, extends all the way through the spindle where it receives change gears when necessary to divide certain numbers that cannot be divided with the index plate direct. The spindle itself is carried on large diameter precision ball bearings, with preloadings carefully calculated to avoid distortion under working load.

Circular milling is possible, as the dividing head spindle can be revolved by power without engagement of the table screw. The dividing head in that case becomes a rotary table which may be operated either with the spindle in horizontal or vertical positions, or at any angle between them. It is also possible to set the dividing head crosswise of the table so that the

head spindle and main spindle of the machine are parallel. A right-angle drive mechanism has been designed to permit the dividing head to be revolved in this position with or without feeding the table. This arrangement makes it possible to mill uniform cams of any lead whatsoever, varying in lead by as small an amount as 0.0001 in.; the smallest lead that can be milled is 0.022 in.

A thread milling attachment can be furnished for milling all threads from 38 to 1 per in., including 11½ threads per in. for pipe. Taper threads can be milled on pipe taps, studs, etc., by elevating the tail center and setting the dividing head at the proper angle.

## Seamless Steel Pipe Fittings for Welding

A COMPLETE line of seamless steel pipe fittings for welding, consisting of elbows, tees, reducing tees, bull plugs and reducing nipples, as well as the company's forged steel butt-welding flanges, are being marketed by the Taylor Forge & Pipe Works, Box 485, Chicago. All sizes to 24 in. inclusive will be made, 12 in. and smaller sizes now being available. The tees are made in 2 to 8 in. sizes.

This line of seamless pipe fittings for welding permits entire pipe systems fabricated by welding to be installed with the use of only circumferential welds. These fittings are light in weight and, therefore, require fewer and lighter supports. Erection is simpler and less space is required in erection. The elbows are made without thinning or buckling of the walls, and have the advantage of short tangents to facilitate welding and accurate lining up. Elbows are made of the standard center-to-end measurement of American standard extra-heavy screwed fittings, and with end-to-center-to-end dimension equal to one and one-half times the nominal pipe diameter. The ends are machine tool beveled, providing a smooth, clean surface for welding.

The tees are a forged tubular prod-

uct not to be confused with forged steel tees that are made solid and drilled out. They are made to pipe thickness at the ends, the body being thickened up around the outlet to give required reinforcement. The tees have sweep outlets, an important feature for high velocity lines.

Features claimed for the Taylor fittings, as set forth by the company, are: The reducing nipples are designed especially for welding, with the sufficient length to facilitate installation, yet shorter in dimension than that of the screwed reducing nipple. The smooth, well-balanced shape of the reducing section assists materially in fostering easy and unimpaired flow. The bull plugs are forged under the most approved forging conditions, formed to an ellipsoidal shape to withstand end pressure, and made with a surplus of straight section to



facilitate attachment to the pipe. The butt-welding flanges, providing for the insertion of valves in welded pipe installations, have a long fillet at the hub to prevent distortion, and are made to conform to American standard strength requirements.

Taps—questions often asked about them and some problems met in manufacture—is the subject of an 18-page manual published by the Morse Twist Drill & Machine Co., New Bedford, Mass. The various types of taps and their uses are described and useful data are given on the lubrication under different conditions of service. The section on tap construction includes nomenclature, lead, chamfer and tolerances.

Production of babbitt metal by 43 producers in June totaled 2,306,940 lb., against 2,408,781 lb. in May, according to the Bureau of the Census.

# Horizontal Boring, Drilling and Milling Machine for Large Work

**JOSEPH T. RYERSON & SON, INC.**, Chicago, in conjunction with the Ohio Machine Tool Co., Kenton, Ohio, has developed the large special horizontal boring, drilling and milling machine here pictured. The weight of this machine is 60,000 lb.

Specifications include: Diameter of spindle, 5 in.; continuous feed to spindle, 36 in.; and reset to spindle, 40 in. Also, working surface of table, 60 x 96 in., with a cross feed of 94 in.; maximum distance top of table to center-line of spindle, 85½ in.; and maximum distance faceplate to bar support, 168 in.

Eighteen speeds, all reversible, are obtainable. Eight boring and drilling feeds and 16 milling feeds to the head, table and saddle, also reversible, are furnished. Feeds are not affected by the drive backgears as they secure their primary drive from the spindle. Centralized oiling systems are furnished to all units. All gearing and shafting is of high carbon alloy steel heat treated. No loose keys are used on the shafts; gears operate on multiple-splined shafts or squared sections. Helical tooth bevel gears and herringbone gears are used wherever possible. The backgears to spindle located at the faceplate are herringbone.

The machine is equipped with a 60-in. power and hand-driven revolving table which receives its power feed

and rapid traverse from the feed shaft in the bed. It is also equipped with a thread-chasing attachment which operates directly from the spindle through a minimum number of gears and shafts to the feed pinion operating on the spindle sleeve. The mechanism is interlocked so that the feeding and threading operation cannot be thrown in at the same time. Any number of threads per inch can be cut.

All controls may be operated from the head, with the exception of the directional control levers to the table and table saddle. Controls for the motor may be operated both from the head and from the floor. The spindle final drive is through a large internally driven faceplate, and as the backgear is mounted in the head close to the final drive, great power is delivered to the boring bar. Rapid traverse of

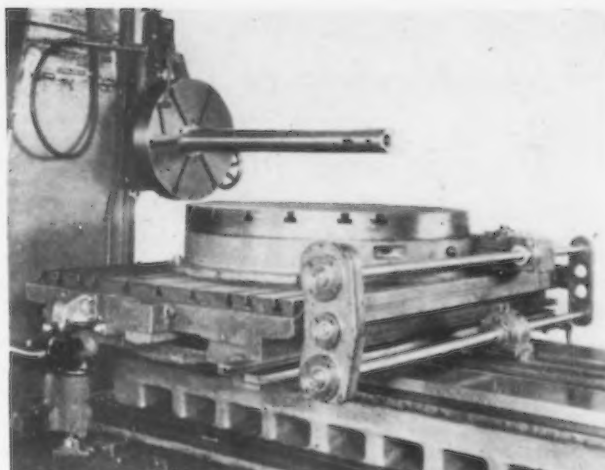
selective type is furnished to all units and can be set to traverse in any direction desired, exclusive of the direction of the feed or spindle.

All guides are of the square-lock type with steel taper gibs fitted their entire length. Feed screws are of large diameter and are centrally located between the guiding surfaces. The guide and screw for the head movement are located close to the faceplate to eliminate any tendency for the head to spring. The guide for the table is on the side of the saddle closest to the spindle head. The saddle bearing is unusually wide, and at no time does the table have less than 60 per cent bearing on its saddle. The saddle is guided on a bed, 54 in. wide, by a narrow guide located in the center, with the feed screw directly under the center of the spindle at all times. This arrangement is especially useful in boring holes in conjunction with the regular feed to the spindle. The table can be hand-traversed from either side.

The bed, a heavy box casting with three wide ways, contains chip chutes and the cutting compound lubricating system. The boring bar support is of the closed type with an adjustment to the feeding nut. The outboard bearing travels in conjunction with the main head, as it is driven through special cut bevel gears and helical tooth spur gears. This unit can be removed from its base; it is traversed on the bed by a gear reduction operating on racks bolted to the bed on each side.

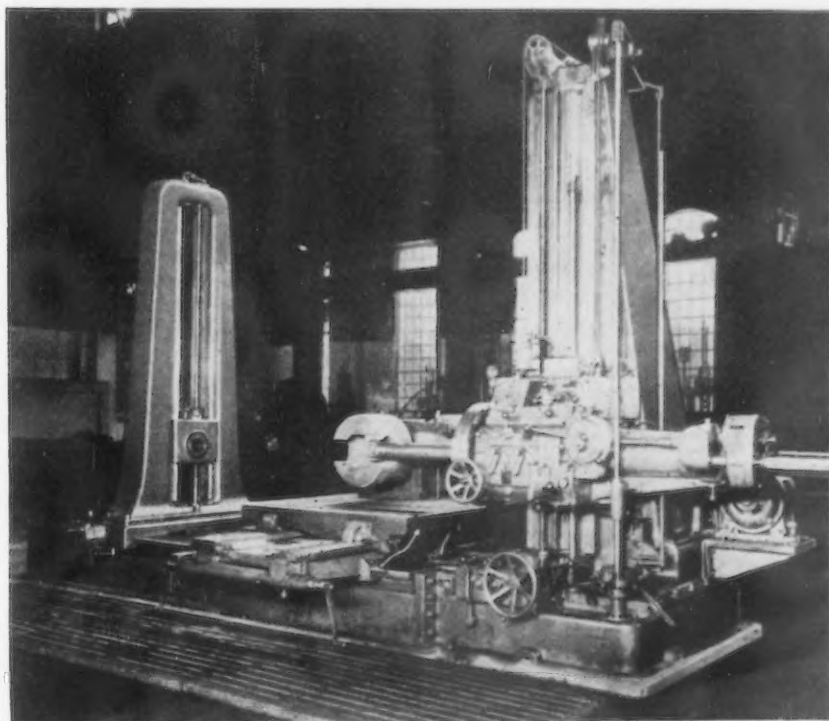
The main post is a heavy box-shaped internally braced casting with two straight and two tapered sides. In its base is a speed box containing three speeds of the driving mechanism. The counterweight for the head is suspended by two cables running on roller-bearing pulleys and is entirely inclosed in the post.

Power is furnished by a 20-hp. constant-speed reversible type motor connected by a silent chain to the primary drive shaft.



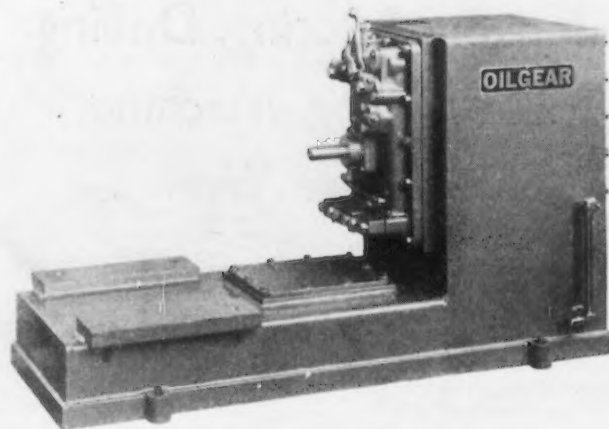
Above—Close-up showing the 60-in. power and hand-driven revolving head.

Below—The large special boring, drilling and milling machine which has a 5-in. spindle and a 60 x 96-in. working surface of the table.





## New Models of Oilgear Pumps and Hydraulic Motors



**N**EW models of hydraulic equipment manufactured by the Oilgear Co., Milwaukee, for high pressure (1500 lb.) service include one-way variable delivery pumps in two styles—with and without constant and variable pressure control, designated respectively as types QR-2 and QWR-2. The former is designed for the operation of various types of machine tools where a positive straight-line motion is essential and for use in connection with Oilgear constant-displacement motors as a variable-speed transmission unit. Pumps equipped with constant and variable pressure control are especially suitable for operation of machines performing squeezing, riveting and other operations where it is necessary to hold work under a predetermined pressure for a period of time.

The pumps are self-contained units mounted on a flange so arranged that the unit can be flanged into the machine which it operates. The mounting is either in the standard oil casing or, as illustrated, in a large combination oil reservoir and base for direct-connected motor drive.

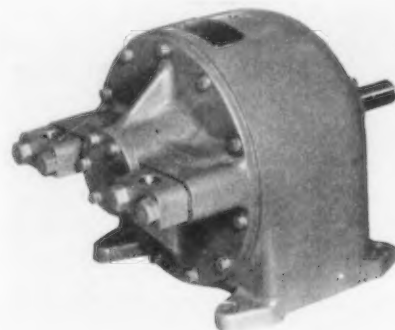
Smooth and constant volume of oil at any pressure up to the maximum is assured by the multiple-plunger type of pump. Oil is delivered in one direction only from the pressure con-

nection on the pump. A control valve must be used for reversing the flow of oil from the pump to a reciprocating cylinder or rotary motor. The amount of oil delivered is controlled by a lever located near the top of the pump. Any delivery from 60 to 1650 cu. in. per min. can be obtained instantly by adjusting the position of the control lever. A relief valve limits the peak pressure in the system and protects the pump, work and tools against overload.

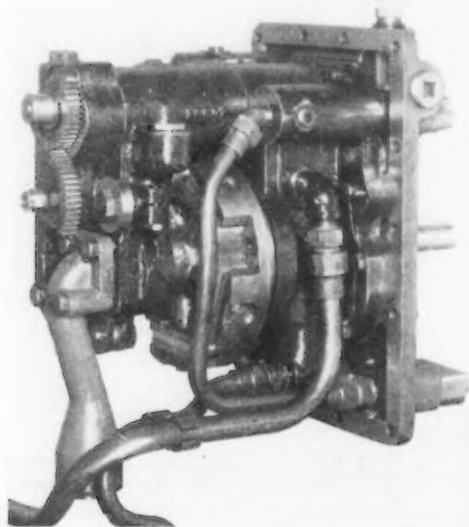
Pumps equipped with the constant and variable pressure control deliver full volume up to the pressure at which the control is set. When this pressure is reached or exceeded, the stroke of the pump, and hence the delivery of oil, is reduced automatically to a point where the pump is delivering only sufficient oil to maintain that pressure in the system continuously. Overheating is thus eliminated and power saved. In this way, any pressure from 500 to 1500 lb. per sq. in. may be maintained. Adjustment of the pressure desired is made by turning a screw on the face of the pump. A relief valve limits the peak pressure in the system. The company is also building two pumps similar to those described above, but having maximum working pressures of 2500 lb. per sq. in.

For use in conjunction with the new Oilgear pumps for variable speed transmission service, a constant-displacement motor, type RQ-2, has been announced also. Such units may be used for operation of conveyors, paper mill drives and other machinery, a smooth rotary motion being provided. Reciprocation of large grinding machine tables by means of rack and pinion is another application suggested.

With a constant-speed source of power to the variable-delivery pump, the speed of the motor shaft can be varied from zero to maximum under



This new constant-displacement Oilgear hydraulic motor may be used with the pump as a variable-speed transmission.



THE illustration at the top of the page shows the type QR-2 or QWR-2 pump with base arranged for direct motor drive. The base contains a large oil reservoir.

Left—One-way variable delivery pump with oil casing removed to show the compact, self-contained internal construction.

the control of a single operating lever. The working parts of the motor are similar to those of the variable-delivery pump described above. The stroke of the pistons is fixed. Maximum speed recommended is 860 r.p.m. The normal working pressure of 1500 lb. per sq. in. may be increased to 1750 lb. for peak loads. Maximum output ranges from 1.9 to 6.9 hp. at 500 and 1750 lb. pressure respectively. The net weight of the motor is 200 lb.

Newark Wire Cloth Co., Newark, N. J., has designated Pacific Metals Co., Ltd., its West Coast representative. Limited stocks will be maintained by the Pacific company both in Los Angeles and San Francisco.



# FAITH, HOPE AND CHARITY

**F**AITH, HOPE and CHARITY are well advertised triplets. They work together in business, or not at all.

At present, Hope is working overtime, while Faith and Charity are away on vacations.

Buyers and sellers of industrial commodities and products are living chiefly on Hope. As a diet, it may stimulate, but it does not nourish.

Too many of us are hoping intensively for a turn in business and waiting for someone else to bring it about.

Too many are hoping that the stock market will rise; that European economics will be stabilized; that something will happen to put us all back on the road to good times.

Too many of us have become so internationally minded and so statistically minded that we are watching other people's business and neglecting our own. Watching for signs of better business is not so productive as is hanging our own signs where the most people will see them.

Better business will come when we stop concentrating on the economic horizon, forget the catchwords of business and make Faith and Charity keep step with Hope in our own individual affairs.

We need faith in the products we make, faith in our power to sell them at a profit.

Faith will release more buying orders in a week than Hope could liberate in a decade. Faith will put our sales messages back into circulation and re-equip our plants with modern machinery. Faith will turn red ink into black.

But Faith must be backed up by Charity. And Charity should begin its work at home.

It is not Charity to starve your own business and ruin your own competitors' by killing the profit margin through price cutting.

It is not Charity to postpone, because "business is poor" the relief that intelligent plant modernization would bring it through the restoration of its life blood—profits.

Charity is the relief of the poor. There is no sounder way to relieve poor business than to make it profitable.

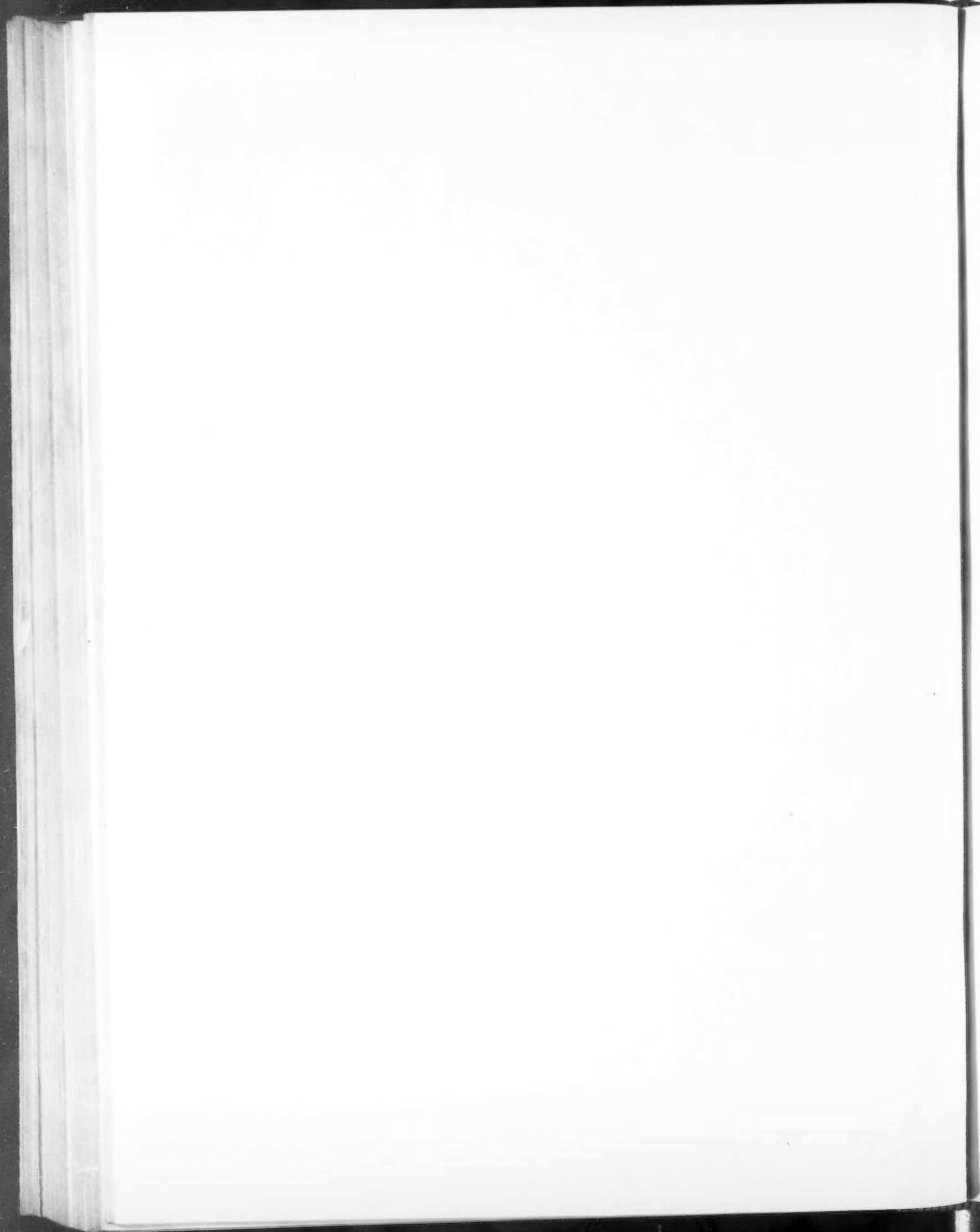
Let's put Faith and Charity back to work with Hope, in our own businesses—*now*.

Copies of this insert may be secured from the Reader Service Dept. of The Iron Age, 239 West Thirty-ninth Street, New York.

Previous recent editorials in this series appeared in the following issues of THE IRON AGE: March 12, March 19, April 9, April 16, April 23, April 30, May 7, May 14, May 21, May 28, June 4, June 18, July 9, 1931.

*The Iron Age, July 30, 1931—327*

By  
**JOHN H. VAN DEVENTER**  
Industrial Consultant  
The Iron Age



# Exports Lowest in 22½ Years; Imports Slightly Up in June

WASHINGTON, July 27.—Totaling only 75,585 gross tons, exports of iron and steel in June sank to their lowest level since January, 1909, when they were 70,085 tons. Previously the nearest approach to the 1909 figure was in August, 1921, when exports were 75,827 tons, after having been more than seven times that amount in the previous January. The shipments in June reflected a decrease of 15,822 tons under those of May, which amounted to 91,407 tons.

Exports in the first half of 1931, aggregating 561,542 tons, represented a decline of 661,080 tons, or almost 54 per cent from the like period of last year, when they aggregated 1,222,622 tons.

Imports in June, at 37,819 tons, made a gain of only 643 tons over

those of May. In the first six months imports were 232,094 tons, a decrease of 68,428 tons, or 22.7 per cent, from imports in the first half of 1930, totaling 300,522 tons.

Losses in exports in June compared with May were made in practically all products, the principal exceptions being ferromanganese, plain structural material and cast iron pipe. The largest outgoing movement of finished products in June was plain structural shapes. This amounted to 8139 tons, of which Canada took 6559 tons.

Total exports to Canada in June were 29,818 tons, or approximately 40 per cent of the entire export movement. The Philippine Islands ranked second, taking 8538 tons, while Japan was third with 6924 tons.

The heaviest finished tonnage im-

ported in June consisted of 6338 tons of structural shapes, of which 4070 tons came from Belgium and 1531 tons from Germany. The second largest incoming movement in finished steel was 4128 tons of steel bars, of which 1799 tons came from Belgium and 1420 tons from Germany. In six months, imports of steel bars, including reinforcing bars, reached 46,922 tons—about 150 per cent higher than the 18,851 tons of the first six months of 1930.

Soviet Russia supplied 23,791 tons of the 37,095 tons of manganese ore imported in June.

Belgium led as the source of June imports, supplying 11,202 tons. Germany was second, furnishing 7773 tons. British India was third, with 7510 tons, practically all pig iron.

Exports of Iron and Steel from the United States  
(In Gross Tons)

	June		Six Months Ended June	
	1931	1930	1931	1930
Pig iron.....	764	1,000	3,211	9,162
Ferromanganese.....	1,036	1,050	1,051	5,005
Scrap.....	10,490	37,201	76,373	283,153
<b>Pig iron, ferroalloys and scrap.....</b>	<b>12,290</b>	<b>39,251</b>	<b>80,635</b>	<b>297,320</b>
Ingots, blooms, billets, sheet bar.....	36	1,675	2,059	14,230
Skelp.....	3,534	7,239	33,108	55,168
Wire rods.....	2,412	4,479	20,388	25,851
<b>Semi-finished steel.....</b>	<b>5,982</b>	<b>13,393</b>	<b>55,555</b>	<b>95,249</b>
Steel bars.....	2,921	7,245	25,036	56,280
Alloy steel bars.....	87	475	2,349	4,780
Iron bars.....	133	112	576	881
Plates, iron and steel....	4,495	6,276	28,865	61,635
Sheets, galvanized steel...	5,879	7,068	28,427	52,427
Sheets, black steel.....	160	549	3,073	3,588
Sheets, black iron.....	7,645	6,862	46,742	67,771
Sheets, black iron.....	485	843	3,931	5,987
Hoops, bands, strip steel	1,695	3,249	18,932	26,463
Tin plate; terne plate...	5,413	14,181	43,394	121,104
Structural shapes, plain material.....	8,139	10,229	54,041	79,166
Structural material, fabricated.....	1,469	8,572	22,411	57,209
Tanks, steel.....	535	855	8,457	7,925
Steel rails.....	1,699	7,750	19,127	54,559
Rail fastenings, switches, frogs, etc.....	729	2,031	4,040	10,727
Boiler tubes.....	463	936	4,235	9,331
Casing and oil-line pipe...	1,326	3,310	15,825	41,782
Pipe, black and galvanized, welded steel....	4,292	7,352	24,158	47,309
Pipe, black and galvanized, welded iron.....	638	1,036	3,042	9,693
Plain wire.....	964	1,872	7,398	15,575
Barbed wire and woven wire fencing.....	1,705	4,790	14,481	22,651
Wire cloth and screening	63	144	830	848
Wire rope.....	194	450	1,523	2,720
Wire nails.....	616	625	4,220	3,816
Other nails and tacks....	319	484	2,060	3,389
Horseshoes.....	4	8	37	69
Bolts, nuts, rivets and washers, except track	344	783	2,873	6,022
<b>Rolled and finished steel</b>	<b>52,412</b>	<b>98,087</b>	<b>390,083</b>	<b>773,707</b>
Cast iron pipe and fittings	2,800	3,029	15,169	18,775
Malleable iron screwed fittings.....	340	680	3,052	6,240
Car wheels and axles...	370	1,653	3,821	8,783
Iron castings.....	259	753	2,568	4,293
Steel castings.....	114	769	2,164	5,971
Forgings.....	551	678	4,638	4,987
<b>Castings and forgings...</b>	<b>4,434</b>	<b>7,562</b>	<b>31,412</b>	<b>49,049</b>
All other.....	467	980	3,857	7,297
<b>Total.....</b>	<b>75,585</b>	<b>159,273</b>	<b>561,542</b>	<b>1,222,622</b>

Imports of Iron and Steel Products into the United States  
(In Gross Tons)

	June		Six Months Ended June	
	1931	1930	1931	1930
Pig iron.....	9,333	6,789	55,823	63,095
Sponge iron.....	5	5	209	.....
Ferromanganese and spiegeleisen*.....	1,898	7,576	14,161	35,851
Ferrochrome†.....	25	57	96	144
Ferrosilicon‡.....	36	832	551	3,982
Other ferroalloys.....	180	.....	790	.....
Scrap.....	1,341	2,668	7,648	14,447
<b>Pig iron, ferroalloys and scrap.....</b>	<b>12,813</b>	<b>17,927</b>	<b>79,278</b>	<b>117,519</b>
Steel ingots, blooms, billets, etc.....	1,622	1,475	11,627	8,943
Wire rods.....	564	955	3,965	5,878
<b>Semi-finished steel.....</b>	<b>2,186</b>	<b>2,430</b>	<b>15,592</b>	<b>14,821</b>
Concrete reinforcement bars	3,771	.....	22,250	.....
Hollow bar and drill steel	144	2,419	767	18,851
Merchant steel bars.....	4,128	.....	23,905	.....
Iron bars.....	214	.....	551	.....
Iron slabs.....	.....	137	40	823
Boiler and other plate...	2	407	629	1,736
Sheets, skelp and saw plate.....	1,856	3,555	11,309	15,996
Tin plate.....	7	38	59	95
Structural shapes.....	6,338	13,496	37,155	87,692
Sheet piling.....	.....	.....	579	.....
Rails and rail fastenings	172	166	3,792	2,479
Welded pipe.....	689	475	3,561	2,643
Other pipe.....	361	1,846	5,239	9,183
Barbed wire.....	857	368	3,496	2,478
Round iron and steel wire	280	428	1,561	2,951
Flat wire and strip steel	25	96	307	761
Wire rope and strand...	206	340	1,067	1,576
Other wire.....	32	34	340	198
Hoops and bands.....	1,633	1,572	9,592	10,224
Nails, tacks and staples	860	716	4,003	2,580
Bolts, nuts and rivets...	6	23	524	237
Other finished steel.....	4	8	206	11
<b>Rolled and finished steel</b>	<b>21,585</b>	<b>26,124</b>	<b>130,932</b>	<b>160,514</b>
Cast iron pipe and fittings	1,112	2,313	5,285	6,667
Castings and forgings...	123	159	1,007	1,001
<b>Total.....</b>	<b>37,819</b>	<b>48,953</b>	<b>232,094</b>	<b>300,522</b>
Manganese ore*.....	.....	15,922	120,052	163,117
Iron ore.....	121,896	292,354	892,576	1,694,110
Magnesite (dead burned)	1,573	45	10,205	21,407

\*Manganese content only.

†Chromium content only.

‡Silicon content only.



## Scrap Institute to File Brief on Rates

The Institute of Scrap Iron and Steel, New York, has filed an appearance with the Interstate Commerce Commission, to be heard in connection with the petition of the railroads for a 15 per cent increase in freight rates. A conference has been arranged between J. J. Pelley, president, New York, New Haven & Hartford Railroad, which is chairman of the special committee of railroads preparing the petition for higher rates, and Benjamin Schwartz, director, Institute of Scrap Iron and Steel.

The brief of the institute to be presented to the Interstate Commerce Commission will be based on a canvass of members now being conducted. It is estimated that the industry contributes about \$30,000,000 annually in freight revenue to the railroads. The proposed 15 per cent increase would add about \$4,500,000 to the freight bill of the scrap industry.

## Iron Ore Imports Decline Sharply

Imports of iron ore into the United States in June are reported by the Department of Commerce at 121,896 gross tons. Except for last February and the preceding November, this is the lowest incoming movement of ore since September, 1925. The drop from May, when 194,397 tons came in, was 37 per cent. Compared with June, 1930, the decline was more than 50 per cent.

In contrast with May, when Russia furnished the largest tonnage, the incoming movement in June showed Chile again at the top, with more than half the total. Imports from Russia declined to only about one-fifth the large May movement, remaining, however, in second position.

In the six months imports have aggregated 892,576 tons. This is only a little more than half the total for the six months of 1930. Most of the decline is represented in imports from Chile, which dropped more than half but which in each period were more than half the total incoming movement. Tonnage from Sweden was only one-third as great this year as last; that from Cuba was less than one-

fifth the previous year's total, and that from French Africa slightly more than one-third. Partly offsetting this, the movement from Russia increased greatly, going from 0.4 per cent of the total to more than 20 per cent.

## Commerce Commission Expedites Hearings

WASHINGTON, July 28.—The Interstate Commerce Commission may reach a decision in the proposed 15 per cent rate advance case of the railroads earlier than had been originally expected. This is due to the fact that the carriers and those supporting them completed testimony sooner than the commission had anticipated. For this reason the commission has rearranged its schedule for further hearings and has made plans for expediting them. While manifestly it is not possible to say when a decision may be handed down, the opinion prevails generally that it will be before the end of the year.

Specific dates for further hearings at which protestants against increased rates will appear were announced last Friday. Two additional commissioners also have been assigned to the case so that hearings may be heard concurrently at different points outside of Washington. The two members added to the case are Commissioners Eastman and Porter. The members originally in charge of the case were Commissioners Meyer, Lewis and Lee. Sitting with the five commissioners will be examiners as well as State commissioners.

Hearings will be resumed on Aug. 4 at Portland, Me., when protestants from New England will be heard. Hearings in Washington will begin again on Aug. 10, when Eastern witnesses will be heard and railroad witnesses will be cross examined.

The remainder of the schedule is as follows:

Portland, Ore., County Court House, Aug. 12.  
San Francisco, Hotel St. Francis, Aug. 17.  
Atlanta, Ga., Hotel Atlanta-Biltmore, Aug. 17.  
Dallas, Tex., Hotel Baker, Aug. 21.  
Salt Lake City, Utah, United States Court House, Aug. 24.  
Kansas City, Mo., Athletic Club, Aug. 26.  
Chicago, Hotel Sherman, Aug. 31.

The hearings were arranged by sections of the country for the accom-

modation of those who want to submit testimony. The commission has announced that printed briefs must be filed within 10 days after the close of the final hearing.

Requests for time which already have been received from opponents to the increase have already exceeded practicable limits, the commission stated, and it has repeated that evidence should "be presented as concisely as possible, using exhibits to curtail oral testimony."

Examiners are canvassing the requests for time and will aid in arranging for the orderly presentation of testimony and the avoidance of cumulative evidence. It is expected that witnesses appearing on identical commodities and on similar issues will be asked to coordinate their testimony and present evidence through as few witnesses as possible, consistent with the submission of complete material testimony.

Evidence relating to the method or methods of increasing rates, if an increase should be granted, the commission stated, should be confined as far as possible to typical illustrations. Similar instructions were given as to evidence tending to show the effect of higher rates upon shipper and carrier.

Oral argument will be held before the commission in Washington about 10 days after the close of the hearings, the exact time to be announced later.

## Burhans & Black Buy Buffalo Company

Buffalo Wholesale Hardware Co., Buffalo, dealer in mill and factory supplies, wholesale hardware, etc., has been acquired by Burhans & Black, Inc., Syracuse, N. Y. W. C. McClaskey, president and treasurer of the latter concern, will hold similar offices in the Buffalo company. Albert W. Weaver and N. A. Taber, of the Buffalo organization, will be retained as secretary-assistant treasurer and vice-president respectively. The management of Burhans & Black, Inc., will remain intact.

## Enameled Products Company Expands

P. B. McBride, Louisville Enameled Products Co., of Louisville, Ky., with some Louisville associates, has purchased the controlling stock and complete interests of the Ferro Enamel Corp. in the latter's Louisville plant. About a year ago, the Louisville company purchased the equipment and business of the Wabash Sanitary Co., and built a separate building to take care of the presses and equipment used in the manufacture of sanitary products.

Sources of American Imports of Iron Ore  
(In Gross Tons)

	June		Six Months Ended June	
	1931	1930	1931	1930
Canada .....	49	.....	202	153
Cuba .....	11,000	7,000	34,000	190,654
Chile .....	65,944	161,948	484,465	1,002,754
Spain .....	.....	6,180	28,337	48,563
Sweden .....	.....	26,947	37,223	112,166
Russia .....	15,424	6,771	181,009	6,771
French Africa .....	11,460	21,240	51,842	150,015
Other countries .....	18,019	62,268	75,498	183,934
Total .....	121,896	292,354	892,576	1,694,110

## Portland Welding Society Plans Joint Meeting

PORTLAND, ORE., July 18.—Plans for a joint meeting in the fall with the Oregon Building Congress, Professional Engineers of Oregon and Portland Chapter of the American Institute of Architects, were discussed at the annual meeting of the Portland section of the American Welding Society. The plans include presentation of papers on the progress of heavy pressure welding and latest developments in structural welding. Officers for the ensuing year are: George C. Dierking, production manager, Steel Tank & Pipe Co., chairman; F. V. Romig, chief engineer, Beall Pipe & Tank Co., vice-chairman; William P. Kellogg, district manager for G. B. Herington, consulting engineer, treasurer.

## Structural Trade Rules Have Wide Support

WASHINGTON, July 28.—It is estimated that about 70 per cent of the structural steel fabricating industry participated in trade practice conference rules which were finally promulgated by the Federal Trade Commission on Tuesday of last week. In addition to the membership of the American Institute of Steel Construction, 45 firms were represented at the sponsoring conference held in Biloxi, Miss., Nov. 11, 1929, under the direction of Commissioner William E. Humphrey, assisted by George McCorkle, assistant trade practice director.

## Sharp Reduction in Coke Output

Production of coke in the United States in June is placed by the Bureau of Mines at 2,802,473 net tons, of which 2,715,173 tons represents by-product coke and the remainder beehive coke. The drop from May was about 13 per cent in total and rather more than that in by-product output. Compared with June, 1930, there was a drop in the total of more than one-third, while the beehive coke produced last month was barely one-third of the amount last year.

## Rustless Steel Gasoline Tanks Used by Navy

About 88 tons of chrome-nickel alloy steel, furnished by the Allegheny Steel Co., Brackenridge, Pa., is being used in the fabrication of gasoline tanks for the new airplane carrier and two cruisers being constructed for the Navy. It is the practice in these ships to pump sea water into

the tanks as the gasoline is drawn off as a means of preserving the trim of the ship. The gasoline floats to the top of the water and is readily drawn off as required. A metal that will withstand the action of salt water is consequently needed, and the Navy Department has specified the 18 per cent chromium, 8 per cent nickel alloy of steel.

The alloy steel tanks are being fabricated for these ships and for four cruisers building in Government yards by the Blaw-Knox Co., Pittsburgh. The airplane carrier, which will be the largest of its type afloat, has 12 gasoline tanks and the cruisers two each.

## American Radiator Buys Gas Equipment Company

American Radiator Co., 40 West Fortieth Street, New York, a subsidiary of American Radiator & Standard Sanitary Corp., has acquired American Gas Products Corp., Chrysler Building, New York, manufacturer of gas-fired equipment for heating and other domestic service, in-

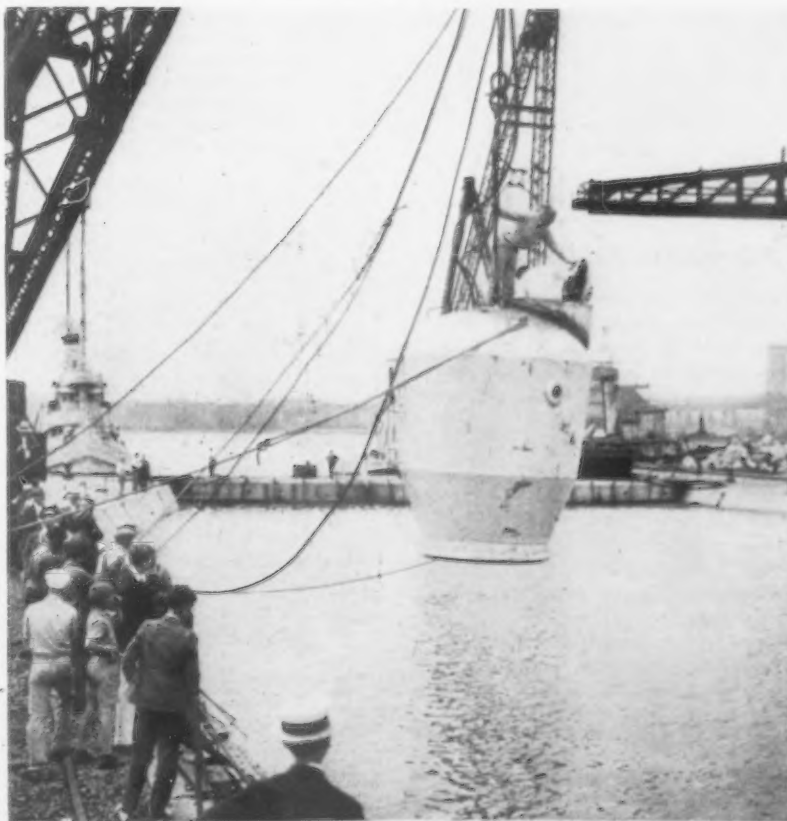
cluding gas-operated apparatus for public utilities. The complete line of the American Gas company will be continued in production and expansion carried out for additional gas-fired equipment. Fox Furnace Co., Elyria, Ohio, an interest of same parent company, is developing a new gas-fired furnace for heating service and will place it in commercial production; the Fox organization will work in close cooperation with the American Gas Products unit.

## General Machinery Corp. Buys Putnam Company

The General Machinery Corp., Hamilton, Ohio, through cash and stock payments, has acquired the Putnam Machine Tool Co., Fitchburg, Mass., formerly a subsidiary of Manning, Maxwell & Moore. The Fitchburg plant in the past was an important factor in the railroad machine tool field, and its product will dovetail well with that of the Niles Tool Works, the General Machinery Corp. subsidiary with which the Putnam business will be consolidated.

## NEW RESCUE CHAMBER FOR UNDERSEA CRAFT

**H**AZARDS of undersea craft may be lessened considerably by this new rescue chamber, successfully tested by the United States Navy. Constructed as a diving bell, the chamber fits over the submarine's hatch and provides an effective means of escape for crews of disabled undersea vessels.





## Partial Response to Call for Coal Conference

WASHINGTON, July 28.—It was stated here today that about one-third of the 123 coal operators and mine owners had responded to invitations sent out last week by Secretary of Commerce Lamont and Secretary of Labor Doak to attend a joint conference with coal miners. The nature of the replies was not announced, however. Among those invited are some of the most prominent men of the country, such as John D. Rockefeller, Jr., and well known industrialists, including Thomas H. Moses, Pittsburgh, H. C. Frick Coke Co.; Herbert F. Perkins, Chicago, Wisconsin Steel Co.; C. A. Buck, Bethlehem, Pa., Bethlehem Mines Corp.; T. M. Girdler, Cleveland, Republic Steel Corp.; I. M. Scott, Wheeling, W. Va.; Arthur Roeder, Denver, Colo., Colorado Fuel & Iron Co., and Herbert Ryding, Birmingham, Ala., Tennessee Coal & Iron Co.

The call for the joint conference is said to have been made at the request of President Hoover. It followed separate informal meetings of the two cabinet officers with coal operators and members of the executive committee of the United Mine Workers of America, headed by President John L. Lewis. The latter sent a telegram to President Hoover on June 11 to call a joint meeting to discuss "stabilization of the bituminous" coal industry, and orally has stated it is sought to have operators recognize the union and discuss wages. Operators so far have shown a disinclination to attend a joint conference with miners, though the invitation sent out at the suggestion of President Hoover may, it is said, result in such a meeting being held in Washington.

## Prizes Offered for Cost-Reduction Articles

Believing that every plant, no matter how well mechanized, has points where material piles up, where unnecessary labor is used, machine operations are interrupted or better transportation is needed, the Chain Belt Co., Milwaukee, has offered prizes for the best means of mitigating these conditions. For the best descriptive article and rough sketch showing how its conveying or other appliances, including construction machinery, can be applied to lower production costs in any plant, a prize of \$200 in cash will be given. A second prize of \$100, a third of \$50 and 15 additional \$10 prizes for acceptable methods are included in the offer.

It is required that the proposed installation be in an existing plant. No case will be too small or too large, provided it will do what is required.

There must be definite data on possible cost reductions. Contestants may submit as many articles and sketches as they wish, provided each covers a different proposed installation.

All matter must be received at the Chain Belt Co. office, in Milwaukee, before 5 p. m., Sept. 21. Each should be accompanied by the name, address, position and firm name of the person submitting the suggestion. Names of contestant or their companies will not be published without authorization.

## Simplification and Waste-Reduction in Pennsylvania

A State-wide simplification and waste-elimination program among producers, distributors and consumers in Pennsylvania, to be sponsored and conducted by the State Chamber of Commerce, with the active assistance of the Division of Simplified Practice of the Bureau of Standards, Department of Commerce, Washington, has been inaugurated, according to statement by George K. Burgess, director of the bureau.

The major objectives of the Penn-

## WORLD'S LARGEST CABLES TO SUPPORT GOLDEN GATE BRIDGE

MORE than 174,000 miles of wire, enough to circle the world seven times at the equator, will be used in the cables and suspender ropes that will swing the Golden Gate bridge, longest span in the world, over San Francisco Bay narrows, according to George C. Moon, vice-president, American Cable Co., New York, which will erect the cables. The two main cables, each one and one-half miles long, and 36¼ in. in diameter, and weighing 10,937 tons each, will be carried over two towers 744 ft. high.



sylvania chamber, in sponsoring this campaign, are to coordinate present waste-elimination activities, to extend the scope and application of the simplification principle and to effect economies through concerted action. Plans, now being formulated, are expected to crystallize about September.

## Manual on Anti-Friction Bearings

A compilation of sizes of bearings proposed as standard for heavy-duty service is covered in Manual No. 11, just issued by the Bantam Ball Bearing Co., South Bend, Ind. The series comprises an organized progression of sizes of roller bearings for rolling mill, paper mill, rubber mill, printing press, super-calender, rock crusher, mining machinery and other such applications.

Karl Herrmann, vice-president of the company, in referring to the large amount of work which his company has been doing recently in the heavy-duty bearing field, refers to a large number of bearings of this type which have been in operation for a considerable period of time. One interesting feature in the manual, which is a volume of 46 pages, consists of two tables of interchangeability between Bantam bearings and bearings made by more than a dozen other manufacturers. One of these tables deals with ball thrust bearings and the other with single and double-row ball radial bearings.

## National Brake Transfers Work to Wilmerding

Consolidation of part of the operations of the National Brake & Electric Co., Milwaukee, with the plant of the Westinghouse Air Brake Co. at Wilmerding Pa., is announced in a statement issued on July 23:

It is announced by the National Brake & Electric Co. that owing to poor business conditions and prospects for certain lines of its manufacture it has been decided to suspend work in these lines. A portion of the operations will be moved to the plant of the Westinghouse Air Brake Co., Wilmerding, Pa., to be combined with similar lines in the plant of the parent company. Some of the company's employees are being moved to Wilmerding along with the activities being transferred there. The National Steel Foundries, a subsidiary of the National Brake & Electric Co., and which employs the larger portion of the men engaged in the company's plant here, will continue to operate with the same personnel as before.

The Milwaukee company, originally the Christensen Engineering Co., pioneer manufacturer of air brakes, employed about 1800 men when operating at capacity. The foundry division is equipped to make castings up to 25 tons.



## June Foundry Equipment Orders Show Decrease

Foundry Equipment Manufacturers' Association reports a decrease in orders in June, the index figure for that month being 40.9, compared with 54.1 in May and 57.7 in April. This association uses as a base of 100 the average monthly shipments for 1922, 1923 and 1924.

The June index of three-months' average of gross orders is 50.9, a marked drop from the May figure of 95.4. Shipments of foundry equipment in June tapered off from those in the preceding month. A decrease in unfilled orders in June is indicated by the index of 70.1, compared with 123.8 in May.

## Spang, Chalfant to Make Electric-Weld Pipe?

Spang, Chalfant & Co., Inc., Clark Building, Pittsburgh, is considering erection of a one-story addition to its plant at Ambridge, Pa., for production of electrically-welded pipe. The cost, including equipment, is estimated at more than \$200,000.

## Steel Castings Output in Sharp Decline

WASHINGTON, July 28.—Orders for commercial steel castings totaled 26,041 net tons in June, against 39,052 tons in May, representing 17.9 and 26.8 per cent of capacity of the producers reporting to the Bureau of the Census. Production in June was 34,923 tons, or 24 per cent of capacity, compared with 43,154 tons or 29.6 per cent of capacity in May.

June orders consisted of 7597 tons

of railroad specialties and 18,444 tons of miscellaneous castings. The output in June was made up of 9410 tons of railroad specialties and 25,515 tons of miscellaneous castings.

Orders reported in the first six months of 1931 totaled 246,446 tons, against 583,609 tons in the like period of last year. Production totaled 278,956 tons, against 636,571 tons.

## Chairmanship of Tariff Commission Still Open

WASHINGTON, July 28.—No intimation has been given as to who will be named as successor to Henry P. Fletcher, chairman of the Tariff Commission, who has resigned, effective Sept. 15. Mr. Fletcher gave no reason for his resignation. The commission is a bi-partisan body, consisting of three Democrats and three Republicans. Mr. Fletcher is a Republican and comes from Pennsylvania.

## Sharp Drop in River Shipments of Steel

Shipments of iron and steel products on the Ohio River in the Pittsburgh district during June amounted to only 46,945 tons, according to the United States Engineer Office, Pittsburgh. This compares with 59,611 tons in the preceding month and with 144,099 tons in June, 1930. On the Monongahela River 21,340 tons of steel was moved in June, as compared with 35,373 tons in May and with 137,603 tons in June, 1930. Allegheny River movement totaled 500 tons in June, as compared with 1330 tons in the preceding month and 700 tons in June, 1930.

## To Take Wheat as Pay for Machines

International Harvester Co., Chicago, has verified reports that many of the company's dealers in the wheat-growing territory are taking wheat as part payment on certain types of machinery used exclusively in wheat production. Arrangements have been made whereby the company will bear part of any loss that may result from the exchange. "The basis of this exchange," Mr. Legge, president, said, "is a price of 75c. a bushel for December delivery at Chicago."

## Fabricated Plate Awards at New Low Level

WASHINGTON, July 28.—Orders for fabricated steel plate declined to 22,806 tons in June, from 26,210 tons in May, according to reports received by the Bureau of the Census from 51 manufacturers. This makes the lowest tonnage in several years. June orders in tons were distributed as follows: Oil storage tanks, 4679; refinery materials and equipment, 1147; tank cars, 18; gas holders, 789; blast furnaces, 356; miscellaneous, 15,817.

## Over Two Billions in Public Works Contracts

WASHINGTON, July 28.—Public and semi-public works contract awards totaling \$49,247,328 were reported to the Public Works Section of the President's Emergency Committee for Employment last week. The addition of this amount brought the total of contract awards reported since Dec. 1, 1930, to \$2,055,355,476.

## AIRPLANE OF NEW DESIGN

Motor car comfort is featured in the "Sky Car," an all-metal cabin monoplane of the "pusher" type, created by William Stout, designer of the Ford tri-motored monoplane. The craft illustrated is so constructed as to minimize engine noises and gasoline fumes.



## Steel Corporation Cuts Dividend and Salaries

Earnings of the United States Steel Corporation for the second quarter of the year dropped \$5,647,312 from those for the first quarter, or to \$13,817,524. After allowing for depletion, depreciation and obsolescence (\$12,211,569 against \$11,325,302 for the first quarter), and for interest on bonds (\$1,375,566), there was available for distribution to stockholders out of earnings, \$230,389. However, including special income of \$7,160,966, "profit arising from sale of fixed property," the total for dividends was \$7,391,355, against \$6,765,057 at the end of the first quarter.

After providing for the regular preferred dividend of 7 per cent, requiring \$6,304,919, there was a net of \$1,086,436 for common dividends. On the basis of 8,701,371 shares of common stock, the net is thus under 12½c. a share, compared with 5c. a share for the first quarter. Without the special income, however, the second quarter shows earnings of a little over 6c. only on each share of preferred stock, with nothing for the common stock.

The common stock was put on a 4 per cent basis, requiring an appropriation from the surplus on this account of \$7,617,856.

Salary cuts were voted by the board of directors, who "recommended that an adjustment of salaries of all officers and other salaried employees be

made in varying percentages, depending upon the character of service rendered."

Earnings of the second quarter of 1930 amounted to \$3.01 a share of common stock and of the first half, \$6.45, upon a slightly smaller number of shares than are now outstanding.

### Sheet & Tube Shows Loss

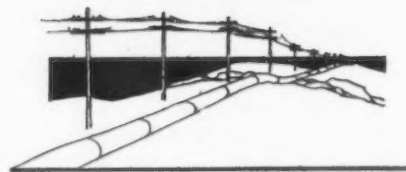
YOUNGSTOWN, July 28.—For the second quarter, Youngstown Sheet & Tube Co. shows net profit before depreciation of \$519,188. Deducting \$1,695,632 for depreciation and mineral depletion, the company shows a loss of \$1,176,444 for the period.

### Jones & Laughlin Earnings

PITTSBURGH, July 28.—Jones & Laughlin Steel Corp., Pittsburgh, in the quarter ended June 30 had total earnings of \$1,939,622, which, after reserves for depreciation and depletion and deduction for bond interest, left a net income of \$391,823. This compares with total earnings of \$1,181,392 in the preceding quarter, leaving a deficit after reserves and bond interest of \$190,982.

For the first six months of 1931, the company's net income amounted to \$200,841, as compared with \$6,958,696 in the first half of 1930.

Regular dividend of 1¼ per cent on preferred stock was declared, while no action was taken on common stock payments. At the last quarterly meeting common stock had been reduced to a \$2 annual basis.



## PIPE LINES

Pure Oil Pipe Line Co., an interest of Pure Oil Co., Chicago, Ill., is planning construction of a new pipe line from Mexia to Jacksboro, Tex., about 140 miles, to double present capacity. In conjunction with Prairie Pipe Line Co., Pure Oil company has begun installation of a line from Teague to Mexia, Tex., 17 miles, to increase capacity.

Amarillo Gas Co., Amarillo, Tex., has purchased pipe line of J. M. Huber Petroleum Co., for \$140,000, and will operate for natural gas service in connection with contract recently made with city of Amarillo. Gas will be purchased from Huber company at its wells. Purchasing company contemplates extensions in acquired pipe line.

Oil Fuel Gas Co., an interest of Columbia Gas & Electric Co., New York, is seeking permission to build a natural gas pipe line through a portion of Marion County, Ind.

Southern Fuel Co., Los Angeles, has placed, with Western Pipe & Steel Co., an order for 76 miles of electrically welded steel pipe, requiring 15,000 tons of steel plates to cost \$1,500,000.

Passaic Valley Water Commission, Paterson, N. J., will take alternate bids Aug. 3 on 20,575 ft. of 51-in. lock-bar or welded steel pipe, or concrete pipe. If steel pipe is bought, 2800 tons of steel will be required.

City of New York has taken bids on the foundations for the West Street elevated highway from Twenty-third to Thirty-eighth Street, taking 10,000 tons of 18-in. seamless pipe with ¾-in. wall.

## Reinforcing Steel

### Two Projects in Chicago Will Require 10,000 Tons

NEW inquiries for reinforcing steel the past week call for 13,300 tons, 10,000 of which is for two jobs in the Sanitary District at Chicago. This is the largest total for any week since March 26. Awards were for only 1950 tons. Of this amount 900 tons is for activities on the Pacific Coast. Contracts in July totaled 24,145 tons, compared with 14,300 tons in June and 24,900 tons in May. Awards follow:

CAMBRIDGE, MASS., 250 tons, underpass at end of Harvard bridge, to Concrete Steel Co.  
BOSTON, 200 tons, Dorchester district intermediate school, to Barker Steel Co.  
RUTLAND, VT., 225 tons, Post Office, to Carroll-McCreary Co.  
ELOISE, MICH., 150 tons, reservoir and sewage treatment plant, to Capitol Steel Corp.  
LANSING, MICH., 220 tons, sewer, to Capitol Steel Corp.  
BERKELEY, CAL., 110 tons, track stadium for University of California, to Gunn, Carle & Co.  
BEVERLY HILLS, CAL., 400 tons, City Hall, to an unnamed bidder.

SAN FRANCISCO, 280 tons, Pier 38 extension and shed, to Soule Steel Co.

ALAMEDA COUNTY, CAL., 110 tons, dam at Sunol for San Francisco Water Department, to Pacific Coast Steel Co.

### Reinforcing Bars Pending

CAMBRIDGE, MASS., 150 tons, Harvard memorial chapel.  
ELIZABETH, N. J., 1500 tons, sewage disposal plant; Northern States Contracting Co., Elizabeth, general contractor.  
NEW YORK CENTRAL RAILROAD, 346 tons, elevated structure between West Eleventh and West Thirtieth Streets, New York; bids open Aug. 15.  
NEW YORK, 100 tons, foundations for Bronx County Court House, 158 Street and Mott Avenue.  
STATE OF NEW JERSEY, 300 tons, highway and bridge approach in Bergen County; George F. Brewster & Sons, Bogota, general contractors.  
WASHINGTON, 300 tons, addition to Kennedy-Warren apartment building.  
WASHINGTON, 250 tons, Standard Oil office building.  
CHICAGO, 10,000 tons, two projects for Sanitary District.  
CORPUS CHRISTIE, TEX., 500 tons, building.  
OKLAHOMA CITY, 1000 tons, bridge work for Atchison, Topeka & Santa Fe Railroad.  
SALT LAKE CITY, 250 tons, Post Office addition.  
LOS ANGELES, 100 tons, harbor berths 144 and 146.

## Railroad Equipment

Chinese National Railways are inquiring for 10 2-8-2 type locomotives and 10 4-6-2 type locomotives. The purchasing department is at Tientsin, North China.

American Railroad of Porto Rico has ordered 200 sugar-cane cars from Gregg Co.

Missouri-Kansas-Texas is inquiring for one baggage and mail gas-electric rail motor car.

Savannah & Atlanta has placed six caboose cars with an unnamed builder.

## Canadian Construction of Nickel Company

WASHINGTON, July 28.—By the end of this year the International Nickel Co. of Canada plans to complete its \$50,000,000 construction program, concentrating all the company activities from mining of ore to the refined product in the Sudbury-Copper Cliff district, says a report to the Department of Commerce. Nickel sulphide will continue to be refined at Port Colborne, Ont.

# PERSONALS

LEON ALFRED PADDOCK, whose election to the presidency of the American Bridge Co., Pittsburgh, was announced in *THE IRON AGE* last week, will continue to maintain his headquarters in the offices of the company in the Frick Building, Pittsburgh. He was born at Pontiac, Mich., in 1879, and entered the employ of the Canadian Bridge Co., Ltd., Walkersville, Ont., in 1904. He was later advanced to the superintendency of that company and was vice-president and general manager prior to his election as president in 1924. He had been vice-president of the American Bridge Co. since April 1, 1927. Mr. Paddock is a director of the American Bridge Co., the Canadian Bridge Co., Ltd., and the Essex Terminal Railway.



L. A. PADDOCK

W. C. McCausland, for 44 years identified with the Carnegie Steel Co., and for 30 years its treasurer, will retire on Aug. 1 and will be succeeded by HOWARD E. JEFFRIES, who has been assistant treasurer. Mr. McCausland was born at Pittsburgh in 1861, and was first associated with the steel industry as an assistant bookkeeper for Carnegie, Phipps & Co., Ltd. He was subsequently cashier of that organization and later held a similar position with the Carnegie Steel Co., Ltd. He was later assistant treasurer and was appointed to the position he is now relinquishing in April, 1901. Mr. Jeffries has been assistant treasurer since Jan. 1, 1920. He was born in 1871 in Westmoreland County, Pa., and entered the employ of Carnegie,



W. C. McCAUSLAND

Phipps & Co., Ltd., in 1887. Before becoming assistant treasurer of the Carnegie Steel Co., he had served as treasurer of the Carnegie Natural Gas Co. WILLIAM I. DITHRIDGE succeeds Mr. Jeffries as assistant treasurer and will continue his duties as cashier. He has been identified with the Carnegie company since 1900.

WILLIAM DONALD, auditor of the Carnegie Steel Co., Pittsburgh, has been made a member of the board of directors of that company.

GEORGE Y. FRANKLE, for 17 years associated with the Grasselli Chemical Co., has been appointed sales manager of the Swann Chemical Co., Birmingham, Ala.

F. HUGH MOREHEAD, chief engineer, Walworth Mfg. Co., Boston, has been elected engineering vice-president of the company.

E. H. SCHELL, professor of business management, Massachusetts Institute of Technology, Boston, has been appointed head of the department of business and engineering administration.

J. C. NICHOLLS, of Copper Cliff, Ontario, has been promoted from general manager to assistant to the president of the International Nickel Co. of Canada, Ltd. DONALD MACASKILL, of Copper Cliff, has been advanced from manager, mining and smelting division, to general man-

ager. Dr. JOHN F. THOMPSON, former assistant to the president, has been made vice-president.

J. C. WILLIAMS, president, Weirton Steel Co. Weirton, W. Va., has been elected president of the Hanna Furnace Co., Buffalo. Both companies are subsidiaries of the National Steel Corp., Pittsburgh. Mr. Williams will continue to serve in his previous capacity in the Weirton organization.

GUY WAINWRIGHT, an official of the Diamond Chain & Mfg. Co., Indianapolis, has been elected secretary of the board of directors of the Indianapolis Utility District, which will have charge of operating municipally owned utilities in that city.

LOUIS WILPUTTE, Wilputte Coke Oven Corp., New York, was included among a list of Belgian engineers given credit for improvements in the iron and steel industry by Charles P. Perin, Perin Engineering Co., New York, in an address which Mr. Perin made last year before the International Congress on Mines, Metallurgy and Geology in Belgium. After an apprenticeship in Belgium under Coppée, Mr. Wilputte came to the United States in 1906 to direct the exploitation of the Koppers oven. "It is to him," said Mr. Perin, "that we owe the considerable increase in the output of coke ovens growing out of the adoption of his system of charging and discharging at fixed intervals of time." Mr. Perin paid trib-



H. E. JEFFRIES



utes to Alexander Holley, J. H. Cremer and Prof. Albert Sauveur, among others.

♦ ♦ ♦

MARK F. HOEPER, former vice-president, Jenkins Machine Co., Sheboygan Falls, Wis., has been made trustee of the company. He recently was appointed general manager to work out a re-organization of the Jenkins company, which has filed a voluntary petition in bankruptcy.

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ROBERT S. WEATHERLY, sales manager of the Swann Chemical Co., Birmingham, Ala., since 1928, has been made vice-president of the company. He is also vice-president of Federal Abrasives Co., a subsidiary of the Swann company.

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## ▲ ▲ ▲ OBITUARY ▲ ▲ ▲

FREDERICK A. HETHERINGTON, structural steel fabricator of Indianapolis, died recently after an illness of several months. He assisted his father in organizing the Hetherington & Berner Co., structural steel company. Mr. Hetherington was interested in the field of applied science, and at one time invented a portable camera, the principles of which were developed later by the Eastman Kodak Co. He also invented a railroad asphalt paving plant. Mr. Hetherington was 71 years old.

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WALTER F. WALKER, founder and president of the American Skein & Foundry Co., Racine, Wis., died July 23 from a heart attack. He was born in Dundee, Ill., and went to Racine in 1905, later establishing a foundry specializing in casting skeins for wagons and carriages. With the passing of the wagon industry, the activities of his company have been devoted principally to making automotive and implement castings. Mr. Walker was 60 years old.

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HENRY J. NIEMANN, member of the board of directors, Enterprise Foundry Co., San Francisco, died June 23.

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WILLIAM H. PERRY, JR., manager of the Hartford, Conn., office of Perry-Buxton-Doane Co., Boston, scrap dealer and broker, died July 18, aged 60. He had been associated with his father in the William H. Perry Co. and took charge of the Hartford office when the William H. Perry Co., E. Buxton & Son Co. and George B. Doane & Son Co. were consolidated in 1911 under the present company name.

♦ ♦ ♦

American Forging & Socket Co., Pontiac, Mich., has declared the regular quarterly dividend of 15c. a share on outstanding common stock, payable Aug. 1 to stock of record July 17.

## Consume Half World's Tin Output

The value of the tin annually imported into the United States for consumption ranges from \$60,000,000 to over \$100,000,000 and accounts for almost half of the world production. Annual domestic production is valued at less than \$50,000.

If the recovery of secondary tin—that is, the production of tin from sources other than ore—were included with primary production, the United States would rank third among the tin-producing countries of the world, whereas otherwise it is a negligible factor. Tin-bearing alloys, tin-plate clippings and melting-pot drosses are the most important materials from which tin is reclaimed. Most of the tin recovered from alloys does not pass through a refined-tin stage, but is made into alloys which are brought to the required specifications by the addition of virgin metals.

Most of the tin plate entering the reclaiming processes consists of trimmings incidental to the fabrication of tin-plate products. In the past some used tin cans have entered the detinning plants, but, the United States Bureau of Mines points out, at present prices for reclaimed metals, the recovery of tin from this source is unprofitable in the United States.

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## New Foundry for Kinite Corporation

Kinite Corporation of Milwaukee has opened a new foundry at Fairmont, W. Va., which will specialize in the manufacture of electric furnace iron castings for glass plants. The new foundry is now making the castings for the Fairmont mold plant of the Owens-Illinois Glass Co., and will supply other plants in that territory. These castings were formerly manufactured at the Toledo foundry of the Kinite Corporation.

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## Better Structural Tonnage in June

WASHINGTON, July 28.—Orders for 156,862 tons of fabricated structural steel in June were reported by 231 establishments to the Bureau of the Census. These concerns had a capacity of 354,025 tons or 88.5 per cent of the United States total. Orders reported by 224 establishments in May totaled 134,301 tons, with 351,561 tons capacity or 87.9 per cent of the total.

Shipments in June reported by 225 establishments were 116,215 tons, against 102,865 tons reported for May by 218 establishments.

Total bookings in June were es-

timated at 177,200 tons while shipments were estimated at 162,400 tons, comparing with 152,800 tons and 148,000 tons, respectively, for May.

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## Steel Castings Business Still in Downward Trend

The June report of the Steel Founders' Society of America, Graybar Building, New York, indicates a further decline in operations and bookings in that month. Compared with May, an increase of 16.5 per cent in the number of foundries reporting operations below 50 per cent in June is noted, with an increase of 16.7 per cent in the number of foundries reporting bookings of below 50 per cent capacity.

Based on returns from 71 member foundries, the report shows that June production was 25.3 per cent of rated normal capacity, and bookings were 20.7 per cent, both of these figures representing a decline from those of May. Production in June, 1930, was 73.1 per cent of capacity, and bookings were 60.1 per cent.

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## New England Technical Libraries Adequate

Technical library facilities throughout New England are adequate, on the whole, to meet the requirements of engineers, a survey by Julian A. Sohon, chief bibliographer of the Engineering Societies Library, New York, discloses. There is a decided lack, however, of foreign books and periodicals in the engineering divisions, and in many libraries the technical literature needs "weeding out."

Twenty-five cities were visited by Mr. Sohon, and 46 engineers were interviewed to determine how far the public library in New England meets the requirements for technical literature, and to obtain suggestions for extending the work of the Engineering Societies Library. The cities included Bridgeport, New Haven, Waterbury and Hartford, in Connecticut; Springfield, Worcester and Boston, in Massachusetts; and Providence, R. I. The inspection included not only public libraries, but the libraries in universities and in industrial organizations.

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## Newton Steel Co. to Transfer Offices

The Newton Steel Co., effective Sept. 1, will establish its executive and general sales offices in Detroit, and the general offices will be located at Monroe, Mich. These offices are being transferred from Youngstown, Ohio.

# Autumn Expansion Merely Seasonal

BY DR. LEWIS H. HANEY

DIRECTOR, NEW YORK UNIVERSITY BUREAU OF BUSINESS RESEARCH

## FAVORABLE FACTORS

1. Large cotton and corn crops are being made very cheaply, indicating a good cash balance for farmers in spite of low prices; country merchants may have to replenish stocks.
2. Sounder sentiment, as the country faces its international relations; less unreasoning "optimism" and "pessimism."
3. A little progress toward stabilizing European political and financial conditions.
4. Stocks of zinc and cotton goods reduced and stocks of a good many manufactured consumers' goods low; periods of replacement buying likely to become increasingly frequent; department stores probably will have to buy further ahead.
5. Industrial production continues subnormal, tending to restore the balance ultimately.
6. The recovery in commodity prices at the end of June, though partly lost, suggests near-bottom levels; steel scrap higher.
7. Bank credit gradually becoming more liquid through revaluation of real estate and securities.
8. Merchandise imports in the last two months have held up slightly better than usual for the season.
9. Industrial and railroad bonds appear to be holding recent gains.

## UNFAVORABLE FACTORS

1. A wide-spread condition of debt with many virtually frozen loans indicates that considerable further liquidation and deflation remain ahead.
2. No improvement in consumers' purchasing power; department store sales declined in June, and mail order sales were lower.
3. Factory employment and payrolls (adjusted) have touched new lows.
4. Stocks of many raw materials are burdensome; stocks of manufactured commodities average but little under a year ago and declined less than seasonally in April and May.
5. Bureau of Labor Statistics commodity price index declined in June, including raw materials; most commodities reacted from the moratorium spurt; a sharp slump in wheat; lower pig iron and steel.
6. Building permits and contracts fell to new lows in June.
7. Automobile sales and production continue to decline.
8. Railroad freight traffic made a new low in June.
9. Exports have fallen to new low levels.
10. Machine tool orders and unfilled steel orders declined in June.
11. Threatening political and financial situations exist in several foreign countries.
12. Extreme timidity among bankers tends to force liquidation and delay expansion.

**A**GAIN it seems clear that most of the business barometers fail to indicate recovery. Most business men and bankers, both in New York and elsewhere, say "sentiment is better, but there is no tangible sign of recovery." In the course of a recent personal inquiry made by the writer in the South and Middle West, it appeared that responsible men have no question as to the ultimate return of prosperity and little real pessimism is found.

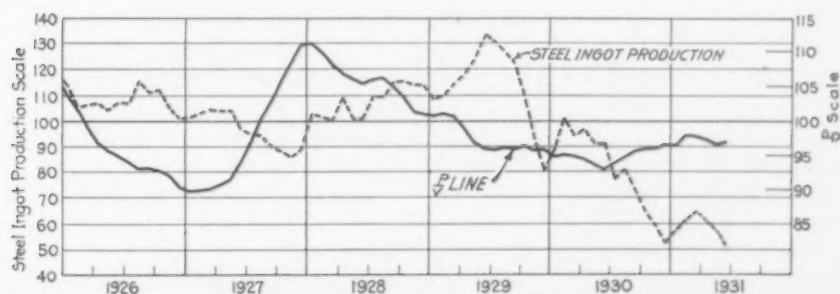
There is a wide-spread feeling, however, that so much further deflation in the value of land, real estate and securities is required, and so much liquidation of mortgages and loans of various kinds, that a period of at least a year will be required "to get turned around." Meanwhile, the attitude of the average banker in the smaller centers is one of extreme caution or even timidity in making loans and investments. There is a tendency to exercise pressure for the purpose of forcing a reduction in debts.

There is the promise of bumper crops of corn and also of cotton in some sections. Yields of small grains and fruit are large; the prices of the former, however, are so low as to give little or no profit, and the collapse of the wheat market is a great blow to Western farmers. The cotton and corn crops will

be very cheaply produced and promise large cash returns. But the farmers are so deeply in debt that it is doubtful if general business will receive much immediate benefit. A threat of considerable drouth damage to the corn crop remains.

Probably the common idea that recovery will be slow is justified. It is doubtful if there will be any general recovery of a sustained character until a period of further liquidation has cleared away much of the remaining frozen credit. Some seasonal gains are naturally to be expected this autumn. Occasional periods of expansion in individual industries for the purpose of supplying shortages in certain consumer goods—as in shoes this spring—are highly probable. But sustained business expansion of more than seasonal proportions is not likely this fall.

Our P-V line rose a little in June, because of the spurt in commodity prices occasioned by the moratorium. It remains below normal, however, and the rise may mean nothing more than a temporary gain in sentiment. The relation between demand and supply in the average commodity market is still characteristic of depression. According to this barometer, no more-than-seasonal increase in steel production that would be sustained is yet in sight.



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▲ ▲ ▲  
Rise of the P/V line in June still leaves it below normal and indicates that recovery may still be postponed. No more than a seasonal business expansion this autumn seems likely.  
▼ ▼ ▼



## Wage Rates Unchanged

FEW meetings of the directors of the United States Steel Corp'n. aroused so much interest or were preceded by so many prognostications in the press as the one held in New York July 28. The almost universal forecast of a wage cut was not fulfilled. Undoubtedly the decision of the directorate to leave wage rates unchanged will have a stabilizing effect on the wage structure throughout industry. A downward wage revision by the world's largest steel company would have removed the strongest support of the policy enunciated at the Washington conferences early in the depression. It would have been the signal for similar action throughout all branches of industry.

But instead of cutting wage rates the Steel Corporation directors reduced dividends to a rate of \$4 annually per common share and announced forthcoming adjustments in salaries. This action cannot be interpreted as other than fair to all concerned. Wage rates have not been advanced since 1923, whereas there have naturally been numerous salary increases since that time. Moreover, wage income has been on a reduced basis for months—ever since rotating of jobs became necessary, while the losses of salaried men have been confined to reductions in incentive payments. In a word, the wage earners suffered first and most severely, and it is only in line with principles of equity that salaried employees and stockholders should assume their share of the burden of the depression.

Aside from the eminent fairness of the Corporation's action, humane considerations must be given due weight. Wage earners for whom only two or three days of work a week can be provided would find it difficult to stand a rate cut that would further curtail their sharply reduced incomes. It is conceivable that the time may come with the Steel Corporation, as it has with certain other manufacturers, when reductions in wage rates can no longer be avoided. But the country is relieved by the knowledge that the directors do not find such action warranted by present conditions.

INDUSTRIAL countries are painfully experiencing an adjustment of equilibrium among incomes in different pursuits, production in respect to demand, and the like. Its inevitable slowness, which is involved with the psychology of masses of people, delays recovery. After the adjustment of equilibrium is more nearly realized, there will be great need for credit. Making use of credit first is calculated to spell renewed inflation. Making use of it subsequently would spell restored confidence and then would do great good.

## Balance of International Payments

IN a pamphlet of 76 pages the Department of Commerce has issued its annual study of "The balance of international payments" for the calendar year 1930, figures for previous years being revised. Some of the figures are quite precise while others are necessarily mere estimates, even bordering on the conjectural.

It is not surprising that there is always a discrepancy between the debits and credits, the sum total of error being of course greater than the net deficiency. In the figures for 1929 as originally published there was a discrepancy of \$9,000,000, which the revision published a year later increases to \$49,000,000. But that is positively insignificant, being less than one-half per cent of the grand total of all credits, or debits, over ten billions. For 1930 the preliminary figures show \$374,000,000 discrepancy, credits, like merchandise exports, totaling \$8,338,000,000 and debits, like imports and American tourist expenditures abroad, totaling \$8,712,000,000.

These studies constitute a great contribution to economic knowledge. Previously, when few facts were known, there was theorizing, enlightened no doubt, but still it was a case of endeavoring to get facts from theory, while now there is an opportunity to construct theory from facts.

The item of most popular interest, by reason of there having been so much controversy, is our export of capital. There has been a tendency to overestimate, through refunding and through underestimating the investment of foreign capital in the United States. This study finds that our net export of capital, excluding receipt of principal of war debts and other governmental transactions, totaled \$4,223,000,000 in the nine years 1922 to 1930 inclusive, or \$469,000,000 a year. Set against the average income of the American people of \$80 billions a year during the period, or the Census reports of wealth, over \$320 billions for 1922 and over \$360 billions at last year's finding, this net export of capital does not look large. A prosperous country ought to be able to do as much or more.

The proportion, however, has not been the issue. The awkward question asked has been how payment of interest on an increasing total is going to be contrived. Our favorable merchandise trade balance has well exceeded the net export of capital. One trouble is that people assign that as a balancing item to too many things. The excess of expenditures by our tourists outside the country over expenditures of foreign tourists in the United States averaged \$349,000,000 a year in 1922-3 and \$713,000,000 in 1929-30. This balance has the same effect as an unfavorable balance in our merchandise trade.



Our total investments abroad are found to have been about \$15 billions as of Jan. 1, 1931, apparently a stupendous sum. Apart from its being largely offset by foreign investments in this country, there is the important point that our net exportation of capital has been less than half a billion a year, so it is a matter of slow growth. Nothing has come or will come suddenly.

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## Fitting the Worker to the Job

CERTAIN British sociologists and psychologists will never be satisfied, apparently, until they have evolved an absolute formula by which a boy may be placed in a life work that will assure him maximum earning power and maximum contentment. They have been working on the problem for years and have received much encouragement, including financial cooperation by the Government.

They have done much good, no doubt, if in no more practical way than to keep alive interest in the great question of fitting the man to the job. But as to the formula, it is not easy to see where any great progress has been made. Laboratory results have not come even close to those which have been attained in many of the large manufacturing plants of America under the organized attention of personnel directors, who are also known by the more descriptive name of industrial relations advisers. Individually and collectively, as they have met in groups for exchange of experience, they seem to have removed from their establishments all but a modicum of misplaced employment. They have accomplished what no formula or unbending system of tests could do.

The British National Institute of Industrial Psychology, after nine years of study of the problem, has made no great practical progress, to judge from the annual report, just issued, which, in saying the following, does not wax particularly eloquent: "The results obtained up to now seem to show beyond question that the youths whose vocation was selected according to the indications of the tests have a better chance of dropping on to the most suitable occupation than those who have had no such guidance."

To the American personnel director the accomplishment noted is not impressive. He knows he has gone much further than this in his own works. His young men have been placed in employment suited to them, if not in the beginning of his contact with them, then finally as the result of shifting them about until each is in the niche intended for him. The director's task has been primarily to fill every position in his plant, skilled and unskilled, with a man mentally and physically equipped to perform the work. In accomplishing this, with more or less close approach to completeness, he has gone far in removing that mischievous waste, referred to in the institute's report, of the employment of men in the wrong kind of work. But his methods do not rest on any empirical laboratory tests or formula, but upon the application of a technique and method evolved by himself and his contemporaries which, while worthy to be called scientific, are above all else practical.

## ▲ ▲ ▲ CORRESPONDENCE ▲ ▲ ▲

### Can Reduce Costs with Equipment Available

*To the Editor:* The depression is getting on the nerves of most of us. Suggestions are coming forth from everyone for a way out of it. A year ago "high wages" had the floor. Lately more and more people demand wage reductions. In the July 23 issue of THE IRON AGE there were two letters in which wage cuts were offered as a cure for the depression.

It seems to me that the people who ask for wage reductions confuse reduced wage rates with reduced labor costs. May I say that the road to reduced costs is not via wage cuts? I have been connected with plants in the United States, Canada and South America, and I have not been in one where substantial cuts in cost could not have been effected by improved methods. And when I say improved methods I do not mean the throwing out of old machinery and investing in new.

There is a better way of doing things with the equipment we have. The majority of foremen and superintendents appear to think that their duties consist of handing out jobs to workmen. There are a few, of course, who plan out the jobs before placing them in the shop and tell the workmen how to do the work, and the maximum time that the work should take. In one plant I reduced man-hours by 30 to 70 per cent and labor costs by 20 to 60 per cent without spending a cent on new equipment.

There are few plants where this opportunity for cutting costs without cutting wages does not exist. And the executives of the plants which are run at such a high state of efficiency that it cannot be improved upon do not need to worry about wage rates. These rate problems are worked out in conjunction with other production problems. It is my firm belief that the manager who can not reduce costs without cutting wages does not know his business and should give way to some one else who does; to one who feels that it is his job to cut costs not the workman's.

The management does need outside help in the strongly unionized industries, such as the building trades, in cutting labor costs. Recently, William L. Dill, manager of the New Jersey Building Contractors' Association, requested the building trades unions to cut their own wages in order to help the building business. He quoted statistics which showed that the Newark building workers were the highest paid in the country, receiving an average of \$1.60 an hour against an average ranging down to \$1 an hour in other cities. Mr. Dill's request was promptly denied by the unions. And they are supported by public opinion.

Why did not Mr. Dill request the unions to remove the various restrictions they impose on these trades instead of cutting their wages? A workman is not allowed to lay more than a certain number of bricks; he is limited in the number of rivets he may drive. Reinforcing rods below  $\frac{3}{4}$  in. must not be cut or bent in the factory. A concrete mixer or a compressor may not be started or stopped without an "engineer" officiating, at \$18 per, and so on to infinity. If Mr. Dill had asked for the removal of these restrictions, he would have had the support of public opinion. And, further, if he did gain his point, he

would have gained something that would have reduced building costs a great deal more than a wage cut.

JAMES WINSTON,

Summit, N. J.

Chief Engineer, Elizabeth Iron Works.

## Calls for Cuts in Taxes and Freight Rates

*To the Editor:* We, in the agricultural West, have read so many articles by Eastern business leaders on various wage scales, railroad rates and other lines that seem a sectional selfishness that we feel the other side of the proposition should be presented.

Our agricultural prices today are reduced below pre-war prices and under such prices our farmers are struggling not to buy luxuries, not to maintain a high standard of living, but to pay taxes, to pay operating expenses and to eke out a mere living. The farmers' wages have not been reduced; they have been completely wiped out. And as a manufacturer, attempting to sell implements to the farm trade, we can say that not only have our profits been wiped out, but, as the owner of a business, my wages have been completely wiped out.

### Says Wage Rates Are Too High

In contrast, we find the wage rates of steel workers practically at war peak, railroad freight rates almost the highest in history, and railroad wages the highest in all history and the working conditions the easiest. Public construction expenditures have gone into the realms of fantastic extravagance and taxes are today taking one-sixth of our national income. Taxes amount to 25 to 30 per cent of the returns which are received from our farms.

Our present plan of maintaining wages has failed and for over a year we have had the greatest amount of unemployment the world has ever seen. Isn't it time to get back to fundamental economic conditions and realize that nothing will sell for more than the purchaser will pay and that the law of supply and demand is still the leading factor and that the only prosperity in the world is the balanced prosperity, where all have a fair income and purchasing power? It is impossible for a plasterer or locomotive engineer to draw \$2 an hour and expect the farmer, who earns 25c. an hour, to buy any number of hours of his labor.

Purchasing power dependent on farm income is greater in one year than that of the total membership of the American Federation of Labor in ten years. Isn't it time to quit penalizing this half of our purchasing power, to stop abusing it? Do not high wages and high prices follow profitable business instead of preceding it?

### Freight Rates Out of Line

Can wheat be raised and sold at 70c. f.o.b., New York, with a freight charge of 35c.? Is it worth as much to transport a bushel of grain from the grain fields of Kansas and Nebraska to New York as it is to prepare the ground, furnish and put in the seed, cut, thresh and haul the grain into town? Can cotton be raised at \$45 a bale and still pay the exorbitant freight charges into New York and the farmer live above the level of a Chinese coolie?

It takes today, with improved machinery, over one hour's work to raise a bushel of wheat worth 35c. on the farm, for the new crop. To secure this 35c., the farmer must own his land, with all improvements, must own some of as late and improved labor-saving machinery as any industrial plant owns. In contrast a bricklayer or plasterer, with no investment, gets from \$1.75 to \$2 for one hour's work. It isn't fair.

We see on one hand the railroads cutting the passenger fare to try to get back some of the business lost to buses

and private cars, and, on the other hand, trying to raise freight rates to get more revenue, with the ultimate results of driving the only profitable part of the railroad company's business into the hands of trucks. To protect them from this competition they are asking that the trucks be regulated off the road. Instead of doing this, isn't the answer "lower rates"?

I honestly believe that if today taxes and freight rates were cut one-third, and the necessary changes made to make the maintenance of these lowered taxes and rates possible, farm land values within two years would increase one-third, farm purchasing power would double and a balanced prosperity would return to this country to gladden the hearts of every laboring man and every business man, as well as every farmer.

Lincoln, Neb.

C. D. AMMON,  
Easy Mfg. Co.

## Scrap Prices as a Barometer

(Concluded from page 309)

scrap was followed fairly closely by production, the upturn occurring about two months later than that for prices, and tapering off near the top to a sort of table-land, whereas prices continued up to a peak.

Immediately after the Armistice, production dropped off sharply. Prices lagged in this instance by about two months. They did, however, precede in the spring of 1919 the upturn of production by an interval of three months.

Since that time we have had a succession of movements in most of which prices have preceded production changes, in the same direction, by intervals varying from one to three months. Such instances occurred in the decline beginning in the fall of 1920; another one in the spring of 1923; an upward movement at the end of that year; a decline early in 1924, with a recovery in the late spring, and a decline early in 1925 with an upward movement in the early summer.

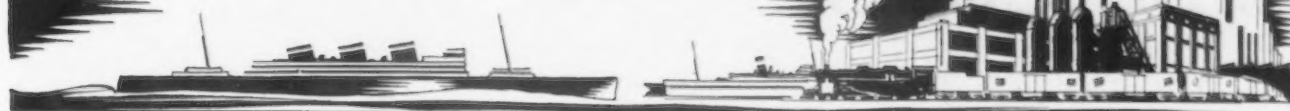
Meantime, however, there have been a number of instances where the case was not so clearly marked. Thus, prices and production both started up sharply and simultaneously in the summer of 1921. Prices began a decline in the latter part of 1925, which was not followed by production until well into the next spring. Production started up heavily early in 1928, and prices followed in the fall of that year. Production started downward after May, 1929, whereas the price decline lagged, beginning the downward course in the autumn.

From the foregoing analysis, it appears that scrap prices are not by any means a dependable barometer as to the subsequent nearby movement of production, and consequently of business volumes. There have been enough divergent cases in the past few years to throw a great deal of doubt upon the value of prices in this particular.

It is true that, in the fall of 1926, prices did precede by several months the slump in production which began in the spring of 1927. There was, however, an intermediate movement in the early months of 1927 which might well have seemed, at the time, to have negated whatever predictive value prices might have been considered to have.



# MARKETS



## Steel Ingot Output Registers First Gain Since March

**A**N out-of-season gain in ingot production, continued buoyancy in scrap and the decision of Steel Corporation directors to maintain wage rates are regarded as constructive factors in an exceedingly quiet iron and steel market.

Steel plant operations have risen at Cleveland, Buffalo, Youngstown and in the Wheeling district, and ingot production for the country at large now averages 32 per cent as against 30 per cent a week ago. The upturn has come at an unusual time—midsummer—and follows an unbroken decline since March. It is difficult to assign a reason for the change unless it be that steel output dipped below the "rock bottom" requirements of the country. And it is too early to foresee whether the gain will be followed by further increases or by relapses to lower rates.

**T**HE closing of the Ford plants from July 27 through August and the sharply reduced schedules of other motor car makers next month certainly do not augur well for automotive consumption of steel in the immediate future. Tin plate output, which has been the brightest spot in the iron and steel situation, likewise is an unfavorable factor, having declined further to a 55 to 60 per cent rate, with additional curtailment in sight. Blast furnace operations also still point downward, with three stacks reported put out during the week—two at Birmingham and one at Chicago.

It is probably because ingot output could register a gain in the face of these developments that confidence has been bolstered. It would, of course, be an exaggeration to say that the trade entertains hopes for a marked change for the better or that it has revised its expectations of a low rate of activity through the month of August, but there is a growing belief—timidly voiced in some cases because of previous disappointments—that the worst has been passed.

**T**HE conviction that business is slowly, if almost imperceptibly, on the mend is read into the action of the Steel Corporation directors in maintaining wage rates, after a reduction had been almost universally forecast. Possibly the fact that the Corporation's operating rate has risen from a recent low of 30 per cent to approximately 34 per cent of capacity turned the scales against a step that would probably have been taken if an indefinite con-

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**P**RODUCTION Average  
Rises to 32 Per Cent—  
Scrap Still Buoyant—Corpora-  
tion Report Favorably Inter-  
preted  
▼ ▼ ▼

tinuance of unprofitable operations seemed to be in prospect. At any rate the Corporation's report is widely interpreted as an indication of faith in the future and should operate to restore the repeatedly shaken confidence of industry in general.

**C**ONSTRUCTION continues to account for a substantial portion of the existing steel plant operations. The steel for some of the larger projects placed earlier in the year—for example, the Radio City, New York, taking 125,000 tons—is now being rolled and shipped. In addition a fair volume of new work is being placed and is coming up for bids.

Fabricated steel awards for the week, at 32,000 tons, compare with 17,000 tons in the previous week. New projects, at 55,000 tons, include a freight terminal and an elevated structure for the New York Central in New York, 21,500 tons. Another New York improvement soon to be contracted for will take 10,000 tons of 18-in. seamless pipe. A 200-mile 20-in. gas line to be awarded in Texas calls for 40,000 tons of steel, while a prospective 125 to 150-mile oil line in the same State will require 34,000 tons.

**I**F an autumn upturn in the steel industry is to materialize it is believed likely that it will be due to an accumulation of increased orders from miscellaneous users rather than to a substantial gain in business from any individual industry. Already some seasonal improvement is reported by radiator and radio manufacturers, and shipments and sales of farm equipment are said to be on the upgrade.

**A**MONG the outstanding consumers of steel, the railroads will undoubtedly do more buying in the fall, although their seasonal requirements will probably be much smaller than usual. The Louisville & Nashville's inquiry for 50,000 tons of rails is still before the trade.

**S**CRAP continues to show evidences of the strength that first manifested itself at Pittsburgh late in June. Foundry grades of old material have advanced in that center, while heavy melting grade has risen 50c. a ton at Philadelphia. THE IRON AGE composite price for heavy melting steel has increased from \$9.25 to \$9.42 a ton, comparing with a low for the depression of \$9.08 in the latter part of June.



# PITTSBURGH

## After-Summer Outlook Is for Mild Seasonal Improvement

**P**ITTSBURGH, July 28.—Financial and major economic factors in the steel industry have been of more interest to the local trade than the current state of demand during the past week. With another very dull month in prospect, specifications for finished steel products are holding their own in some lines, although releases of both sheets and tin plate have fallen off in the last two weeks of the month. The decline in orders which last week brought immediate curtailment in tin mill operations continues, although in a less pronounced manner, and schedules this week are estimated at 55 to 60 per cent of capacity, as compared with 60 per cent in the preceding comparable period.

On sheets lower production is owing principally to the completion of orders taken before price advances were effective, and this tendency was generally expected in the trade. Demand for strip steel is also still adversely affected by decreasing automobile requirements, and suspension of activity during August by a leading maker of low-priced cars will reduce production even more.

Opinion is gaining ground in this district that the industry must be satisfied with only mild seasonal improvement in consumer needs after the dull summer months are over. While the extent of this gain is problematical, it does not seem likely that raw steel production in the Pittsburgh area will approach very near to the spring peak in the next three or four months. If this could be brought about, smaller miscellaneous users of steel would be the chief factors because little substantial gain can probably be expected from any individual industry. Some railroad buying will undoubtedly be developed, and Pittsburgh mills will benefit by a probable steady demand for structural material and reinforcing bars. There is also a fair likelihood of increased automobile requirements as makers begin to get under way on their new models.

Steel ingot production in the Pittsburgh district continues at about 30 per cent of capacity, with the Valleys up slightly to around 35 per cent, and the Wheeling district holding at about 55 per cent. Finishing mill schedules, with the exception of sheet and tin plate as mentioned above, are holding at recent levels.

While recent attempts at price stabilization on a number of important products cannot yet be deter-

**Rate of steel making has not measurably changed and return to spring peak not regarded as likely in next three or four months.**

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**Prices are stronger on some grades of scrap, particularly foundry product.**

\* \* \*

**Tin plate output shows some further curtailment.**

\* \* \*

**Suspension of automobile plants and completion of orders at lower prices are slowing up sheet mills.**

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mined, the sheet market seems well maintained on the new price setup, and some buyers are willing to contract at the higher figures. Strip quotations are also well held, and the market on bars, plates and shapes is better clarified on a 1.60c., Pittsburgh, level. Advances on merchant wire products will not be tested for several weeks, as larger users are generally covered for the quarter at the old figures.

No change of importance has occurred in the raw materials market, with the exception of stronger prices on some grades of scrap, particularly the foundry product. Pig iron is very quiet, and the market on coal and coke has again returned to the dull state which prevailed prior to the strike.

### SEMI-FINISHED STEEL

The market continues dull, but shipments this month have run ahead of June with some companies because of heavier demand from non-integrated sheet makers. Prices are unchanged at \$29 to \$30, Pittsburgh, on billets, slabs and sheet bars, and \$35 on forging billets. Wire rods are also holding at \$35, Pittsburgh or Cleveland.

### PIG IRON

The market shows no further tendency toward activity, and shipments this month are falling behind June. With only one merchant furnace running in the Pittsburgh and Valleys district, production is still running slightly ahead of demand. The Pressed Steel Car Co. is in the market for 100 tons of car wheel iron for McKees Rocks, Pa. No other inquiry is reported, and new buying consists almost entirely of carload lots for immediate delivery. Prices are receiv-

ing no test, with current small lots of foundry, malleable and Bessemer iron bringing \$17, Valley furnace, or \$17.50, Pittsburgh district furnace. Basic is nominal and unchanged from recent levels.

*Prices per gross ton, f.o.b. Valley furnace:*  
Basic ..... \$15.50 to \$16.00  
Bessemer ..... 17.00  
Gray forge ..... 16.50  
No. 2 foundry ..... 17.00  
No. 3 foundry ..... 16.50  
Malleable ..... 17.00  
Low phos., copper free.... 26.66 to 27.00

Freight rate to Pittsburgh or Cleveland district, \$1.76.

*Prices per gross ton, f.o.b. Pittsburgh district furnace:*  
Basic ..... \$16.00 to \$16.50  
No. 2 foundry ..... 17.50  
No. 3 foundry ..... 17.00  
Malleable ..... 17.50  
Bessemer ..... 17.50

Freight rates to points in Pittsburgh district range from 63c. to \$1.13.

### RAILS AND TRACK ACCESSORIES

Releases from at least two important carriers during the last week have given this market a slightly better tone. Nevertheless shipments for July will fall under June, and there is little likelihood of substantial improvement before buying gets under way in the fall.

### BOLTS, NUTS AND RIVETS

Price irregularity continues in the market on bolts and nuts, although a number of the principal makers are adhering in most cases to 73 and 10 per cent off list. Demand is very dull and operations are unchanged at about 25 per cent of capacity.

### BARS, PLATES AND SHAPES

The steady character of the demand for heavy hot-rolled products is probably the most unusual characteristic of the market. Small orders come in every day and releases on old contracts are rather constant. While such business is only sufficient to maintain operations at 30 to 35 per cent of capacity, output is not irregular and seems likely to hold up during August. Structural steel awards are not heavy, but shipments against old contracts are satisfactory for this time of the year. The American Bridge Co. is low bidder on the South Tenth Street bridge at Pittsburgh, requiring 4300 tons of structural shapes. No new inquiry of importance has come out, and the same may be said of reinforcing bars so far as the immediate Pittsburgh territory is concerned.

All the larger makers are now quoting 1.60c., Pittsburgh, on bars, plates and shapes, and little irregularity is

# A Comparison of Prices

Market Prices at Date, and One Week, One Month and One Year Previous,  
Advances Over Past Week in Heavy Type, Declines in Italics

Pig Iron, Per Gross Ton:	July 28, 1931	July 21, 1931	June 30, 1931	July 29, 1930
No. 2 fdy., Philadelphia.....	\$17.01	\$17.01	\$17.01	\$19.76
No. 2, Valley furnace.....	17.00	17.00	17.00	18.00
No. 2, Southern, Cin'tl.....	14.69	14.69	14.69	16.19
No. 2, Birmingham.....	12.00	12.00	12.00	14.00
No. 2 foundry, Chicago*.....	17.50	17.50	17.50	17.50
Basic, del'd eastern Pa.....	16.75	16.75	17.00	18.75
Basic, Valley furnace.....	15.50	15.50	15.50	18.00
Valley Bessemer, del'd P'gh..	18.76	18.76	18.76	20.26
Malleable, Chicago*.....	17.50	17.50	17.50	17.50
Malleable, Valley.....	17.00	17.00	17.00	18.50
L. S. charcoal, Chicago.....	25.04	25.04	25.04	27.04
Ferromanganese, seab'd car lots.....	†\$5.00	†\$5.00	†\$5.00	94.00

\*The average switching charge for delivery to foundries in the Chicago district is 61c. per ton.  
†Ferromanganese quotations adjusted to carload unit, larger quantities at discounts.

Rails, Billets, etc., Per Gross Ton:	July 28, 1931	July 21, 1931	June 30, 1931	July 29, 1930
Rails, heavy, at mill.....	\$43.00	\$43.00	\$43.00	\$43.00
Light rails at mill.....	34.00	34.00	34.00	36.00
Re-rolling billets, Pittsburgh..	29.00	29.00	29.00	31.00
Sheet bars, Pittsburgh.....	29.00	29.00	29.00	31.00
Slabs, Pittsburgh.....	29.00	29.00	29.00	31.00
Forging billets, Pittsburgh.....	35.00	35.00	35.00	36.00
Wire rods, Pittsburgh.....	35.00	35.00	35.00	36.00
	Cents	Cents	Cents	Cents
Skelp, grvd. steel, P'gh, lb....	1.60	1.60	1.65	1.70

Finished Steel, Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Bars, Pittsburgh.....	1.60	1.60	1.65	1.65
Bars, Chicago.....	1.70	1.70	1.70	1.75
Bars, Cleveland.....	1.65	1.65	1.65	1.75
Bars, New York.....	1.93	1.93	1.98	1.98
Tank plates, Pittsburgh.....	1.60	1.60	1.65	1.65
Tank plates, Chicago.....	1.70	1.70	1.70	1.75
Tank plates, New York.....	1.88	1.88	1.93	1.93
Structural shapes, Pittsburgh..	1.60	1.60	1.65	1.65
Structural shapes, Chicago.....	1.70	1.70	1.70	1.75
Structural shapes, New York..	1.85½	1.85½	1.90½	1.85½
Cold-finished bars, Pittsburgh..	2.10	2.10	2.10	2.10
Hot-rolled strips, Pittsburgh..	1.55	1.55	1.55	1.65
Cold-rolled strips, Pittsburgh..	2.15	2.15	2.15	2.45

On export business there are frequent variations from the above prices. Also, in domestic business, there is at times a range of prices on various products, as shown in our market reports on other pages.

Finished Steel, Per Lb. to Large Buyers:	July 28, 1931	July 21, 1931	June 30, 1931	July 29, 1930
Hot-rolled annealed sheets, No. 24, Pittsburgh.....	2.40	2.40	2.40	2.45
Hot-rolled annealed sheets, No. 24, Chicago dist. mill..	2.50	2.50	2.50	2.60
Sheets, galv., No. 24, P'gh....	2.90	2.90	2.90	3.10
Sheets, galv., No. 24, Chicago dist. mill.....	3.00	3.00	3.00	3.25
Hot-rolled sheets, No. 10, P'gh	1.70	1.70	1.70	...
Hot-rolled sheets, No. 10, Chicago dist. mill.....	1.80	1.80	1.80	...
Wire nails, Pittsburgh.....	1.80	1.80	1.80	2.05
Wire nails, Chicago dist. mill..	1.85	1.85	1.85	2.10
Plain wire, Pittsburgh.....	2.20	2.20	2.20	2.30
Plain wire, Chicago dist. mill..	2.25	2.25	2.25	2.35
Barbed wire, galv., P'gh....	2.55	2.55	2.55	2.80
Barbed wire, galv., Chicago dist. mill.....	2.60	2.60	2.60	2.85
Tin plate, 100 lb. box, P'gh..	\$5.00	\$5.00	\$5.00	\$5.25

Old Material, Per Gross Ton:	July 28, 1931	July 21, 1931	June 30, 1931	July 29, 1930
Heavy melting steel, P'gh....	\$10.75	\$10.75	\$10.25	\$14.75
Heavy melting steel, Phila....	8.75	8.25	8.50	12.50
Heavy melting steel, Ch'go....	8.75	8.75	8.75	12.00
Carwheels, Chicago.....	10.00	10.00	10.00	13.50
Carwheels, Philadelphia.....	12.00	12.00	12.00	14.50
No. 1 cast, Pittsburgh.....	11.00	10.50	10.25	13.50
No. 1 cast, Philadelphia.....	11.50	11.50	11.50	13.00
No. 1 cast, Ch'go (net ton)....	9.00	9.00	9.00	12.00
No. 1 RR. wrot., Phila.....	10.00	10.00	10.00	15.00
No. 1 RR. wrot., Ch'go (net)...	7.00	7.00	7.00	10.00

Coke, Connellsville, Per Net Ton at Oven:	July 28, 1931	July 21, 1931	June 30, 1931	July 29, 1930
Furnace coke, prompt.....	\$2.40	\$2.40	\$2.40	\$2.50
Foundry coke, prompt.....	3.50	3.50	3.50	3.50

Metals, Per Lb. to Large Buyers:	Cents	Cents	Cents	Cents
Lake copper, New York.....	8.00	8.12½	9.12½	11.12½
Electrolytic copper, refinery..	7.50	7.75	8.75	10.75
Tin (Strait), New York.....	24.25	25.00	25.20	29.87½
Zinc, East St. Louis.....	3.87½	3.90	3.90	4.75
Zinc, New York.....	4.22½	4.25	4.25	5.10
Lead, St. Louis.....	4.22½	4.22½	4.22½	5.15
Lead, New York.....	4.40	4.40	4.40	5.25
Antimony (Asiatic), N. Y....	6.65	6.75	7.05	7.12½

reported on the ordinary run of business.

## COLD-FINISHED STEEL BARS

Demand seems to be even lighter than before, and further curtailment of automotive requirements will result in even less production next month. The 2.10c., Pittsburgh, price is well maintained.

## WIRE PRODUCTS

As most of the jobbing trade was able to cover for the remainder of the quarter at prices in effect before the recent \$2 a ton advance in merchant wire products, the higher figure is expected to be chiefly an asking price over the next several weeks. Orders for manufacturers' wire are lighter, but the price is well maintained at 2.20c., Pittsburgh. Spring wire is dull and little buying of fencing is reported in the immediate Pittsburgh distributing districts.

## TUBULAR GOODS

While some of the larger units for

the manufacture of electrically welded and seamless pipe are fairly well occupied on orders taken in the last few weeks, no new inquiry is coming out and production in the industry as a whole is spotty. Some projects are still before the trade, but the waning season, together with the difficulties of financing such activity, make it appear unlikely that many more large orders will be placed this year. Lap-weld capacity in the district is engaged at a very low rate, and no particular demand for standard pipe is coming out. Demand for oil well casing and other supplies for the oil country has fallen at least 20 per cent under June this month. Mechanical tubing is also off, but boiler tubes are moving rather steadily.

## TIN PLATE

The volume of releases from the leading can manufacturers is still declining and production of tin plate will fall further in the current week. In the industry as a whole output ranges from 55 to 60 per cent of ca-

capacity. Pack of peas in Wisconsin is expected to fall sharply from last year's levels and the other leading vegetable crops will be only normally large. Decision of the California fruit growers to limit the pack of peaches will affect tin plate production adversely on the Pacific Coast.

## STRIP STEEL

Further decline in releases from the automobile industry has again reduced strip steel production and output is probably at the lowest point in the history of the industry. Some mills are running only every other week and others can manage only two or three turns a week. Miscellaneous demand is steady, but the average size of orders is very small and urgency for delivery invariably forces unprofitable operations on the mills.

Prices are the most favorable aspect of the market. No deviations from 1.55c. and 1.65c., Pittsburgh, are reported on hot-rolled material and cold-rolled strip is holding at 2.15c., Pittsburgh or Cleveland.



## THE IRON AGE COMPOSITE PRICES

Finished Steel		Pig Iron	Steel Scrap
July 28, 1931	2.116c. a Lb.	\$15.54 a Gross Ton	\$9.42 a Gross Ton
One week ago	2.116c.	15.54	9.25
One month ago	2.137c.	15.59	9.17
One year ago	2.171c.	16.96	13.08
Based on steel bars, beams, tank plates, wire, rails, black pipe and sheets. These products make 87 per cent of the United States output.		Based on average of basic iron at Valley furnace and foundry irons at Chicago, Philadelphia, Buffalo, Valley and Birmingham.	
Based on No. 1 heavy melting steel quotations at Pittsburgh, Philadelphia and Chicago.			
High Low		High Low	High Low
1931.....	2.142c., Jan. 13; 2.102c., June 2	\$15.90, Jan. 6; \$15.54, July 21	\$11.33, Jan. 6; \$9.08, June 23
1930.....	2.362c., Jan. 7; 2.121c., Dec. 9	18.21, Jan. 7; 15.90, Dec. 16	15.00, Feb. 18; 11.25, Dec. 9
1929.....	2.412c., April 2; 2.362c., Oct. 29	18.71, May 14; 18.21, Dec. 17	17.58, Jan. 29; 14.08, Dec. 3
1928.....	2.391c., Dec. 11; 2.314c., Jan. 3	18.59, Nov. 27; 17.04, July 24	16.50, Dec. 31; 13.08, July 2
1927.....	2.453c., Jan. 4; 2.293c., Oct. 25	19.71, Jan. 4; 17.54, Nov. 1	15.25, Jan. 11; 13.08, Nov. 22
1926.....	2.453c., Jan. 5; 2.403c., May 18	21.54, Jan. 5; 19.46, July 13	17.25, Jan. 5; 14.00, June 1
1925.....	2.560c., Jan. 6; 2.396c., Aug. 18	22.50, Jan. 13; 18.96, July 7	20.83, Jan. 13; 15.08, May 5

### SHEETS

While production during the latter part of the month has fallen 5 to 10 per cent under the levels of the first two weeks, present output is still slightly ahead of the June average. This is particularly true in the case of the jobbing mill sheets in the ordinary finishes, as shipments of full finished material are still declining. Complete suspension of activity by one large maker of low-priced cars during August will curtail demand for auto body sheets even more sharply.

Most of the movement of ordinary sheets this month is at the low prices prevalent prior to the adoption of the new schedules on July 1. This tonnage is supposed to be shipped by July 31, and during the present week producers are concentrating their attention on securing contracts at the new levels. A number of large consumers have already covered their requirements, and scarcely any deviation from 1.70c., Pittsburgh, on hot-rolled sheets, 2.40c. on hot-rolled annealed, 2.35c. on heavy cold-rolled, 3.10c. on auto body, and 2.90c. on galvanized sheets, is reported. Operations in the industry as a whole are slightly over 35 per cent of capacity.

### COAL AND COKE

The market is very dull and the smoldering strike is no longer a market factor of any consequence. Coal prices have dropped as low or lower than they were before the strike began. The Lake cargo movement is much smaller than usual. No business is reported in furnace coke and the market is nominally quoted at \$2.40, Connellsville. Prices on the furnace grade are unchanged.

### OLD MATERIAL

The scrap market has been comparatively quiet in the last week, with no important sales into consumption reported. One or two small sales of No. 1 heavy melting steel are said to have been made at \$10.75 and \$11, and the market is clearly unchanged

from previous quotations. However, dealers would be unwilling to sell any considerable tonnage of this grade at less than \$11. The other grades are also strong, particularly rails, which are very scarce. A number of other grades are also reported to be difficult to pick up. Blast furnace material is unchanged, with dealers paying as high as \$8 to cover at one point. No. 1 cast is stronger, particularly the better grades. The monthly list of the Pennsylvania Railroad contains 30,000 tons of scrap, including 6750 tons of No. 1 heavy melting steel and 3700 tons of rails. Bids will be opened Aug. 5. The Baltimore & Ohio list, opening Aug. 3, contains less than 4000 tons of scrap.

*Prices per gross ton delivered consumers' yards in Pittsburgh and points taking the Pittsburgh district freight rate:*

Basic Open-Hearth Grades:  
No. 1 heavy melting steel... \$10.50 to \$11.00  
No. 2 heavy melting steel... 9.50 to 10.00

### Warehouse Prices, f.o.b. Pittsburgh

\*Base per Lb.

Plates ..... 2.85c.  
Structural shapes..... 2.85c.  
Soft steel bars and small shapes... 2.60c.  
Reinforcing steel bars..... 2.60c.  
Cold-finished and screw stock—  
Rounds and hexagons..... 3.10c.  
Squares and flats..... 3.60c.  
Bands ..... 2.95c.  
Hoops ..... 3.95c.  
Hot-rolled annealed sheets (No. 24), 25 or more bundles..... 3.05c.  
Galv. sheets (No. 24), 25 or more bundles ..... 3.40c.  
Hot-rolled sheets (No. 10)..... 3.10c.  
Galv. corrug. sheets (No. 28), per square (less than 3750 lb.)..... 3.74c.  
Spikes, large ..... 2.65c.  
Small ..... 2.90c. to 3.05c.  
Boat ..... 3.15c.  
Track bolts, all sizes, per 100 count, 60 and 10 per cent off list  
Machine bolts, 100 count, 60 and 10 per cent off list  
Carriage bolts, 100 count, 60 and 10 per cent off list  
Nuts, all styles, 100 count, 60 and 10 per cent off list  
Large rivets, base per 100 lb..... \$3.20  
Wire, black, soft ann'd, base per 100 lb. .... 2.30  
Wire, galv. soft, base per 100 lb..... 2.75  
Common wire nails, per keg..... 2.05  
Cement coated nails, per keg..... 2.05

\*On plates, structurals, bars, reinforcing bars, bands, hoops and blue annealed sheets, base applies to orders of 400 to 999 lb.

Scrap rails ..... \$10.50 to \$11.00  
Compressed sheet steel.... 10.25 to 10.75  
Bundled sheets, sides and ends ..... 8.50 to 9.00  
Cast iron carwheels..... 10.50 to 11.00  
Sheet bar crops, ordinary... 11.50 to 12.00  
Heavy breakable cast.... 10.50 to 11.50  
No. 2 railroad wrought... 10.50 to 11.00  
Hvy. steel axle turnings... 9.50 to 10.00  
Machine shop turnings.... 7.00 to 7.50

#### Acid Open-Hearth Grades:

Railr. knuckles and couplers 12.75 to 13.25  
Railr. coil and leaf springs 12.75 to 13.25  
Rolled steel wheels..... 12.75 to 13.25  
Low phos. billet and bloom ends ..... 14.50 to 15.00  
Low phos. mill plates.... 12.50 to 13.00  
Low phos. light grades.... 12.50 to 13.00  
Low phos. sheet bar crops 13.00 to 13.50  
Heavy steel axle turnings. 9.50 to 10.00

#### Electric Furnace Grades:

Low phos. punchings.... 13.50 to 14.00  
Heavy steel axle turnings. 9.50 to 10.00

#### Blast Furnace Grades:

Short shovelling steel turnings ..... 7.75 to 8.25  
Short mixed borings and turnings ..... 7.75 to 8.25  
Cast iron borings..... 7.75 to 8.25

#### Rolling Mill Grades:

Steel car axles ..... 16.50 to 17.50

#### Cupola Grades:

No. 1 cast ..... 10.00 to 11.00  
Rails 3 ft. and under.... 12.50 to 13.00

## Automobile Output Off 21 Per Cent in June

WASHINGTON, July 28.—Output of motor vehicles in the United States in June totaled 249,462 units, the lowest since last February, when production was 219,940. But, except for May, April and March, the June figure was the highest since that of last July. The May output this year was 315,115 vehicles, and that for June, 1930, was 334,506.

As reported to the Bureau of the Census, 207,798 passenger cars, 41,304 motor trucks and 360 taxicabs were manufactured last month. Production for the first six months totaled 1,568,478 vehicles, of which 1,310,435 were passenger cars, 255,227 were trucks and 2816 were taxicabs. In the like period of last year the output was 2,198,580, consisting of 1,860,361 passenger cars, 333,591 trucks and 4628 taxicabs.



# CHICAGO

## Shipments Are Not Showing Usual Seasonal Drop

CHICAGO, July 28.—Beyond a slight increase in specifications for finished steel products, there is little in this market that would indicate a change. The leading independent has blown out a blast furnace, thereby leaving 9 out of 36 stacks active at local steel mills. This change in iron production is not reflected in ingot output, which still stands close to 30 per cent of capacity. However, underneath this blanket of low but steady demand, there is an undercurrent which seems at this time to be building up support for a stronger market. Many manufacturers are finding business has a quicker pulse and manufactured equipment is moving faster from warehouses. An example of this is given by the agricultural implement group which for many months has had hanging over it oversized stocks of finished machinery. Shipments of farm machinery are gaining and sales are also more active. One farm equipment manufacturer reports last week's sales as the best in many months.

Once again there are reports that railroad car buying is nearer at hand though there is little under consideration at present. The need for oil country goods appears to be lighter, and it is not at all unlikely that a local pipe mill will suspend operations near the end of the month. There is some business of this kind in sight but, like most projects that come up during times such as these, there are many delays between inquiries and the placing of contracts. Some parts of the market are marking time while waiting an expected seasonal turn. Sheet producers expect to find the roofing trade active in a week or ten days and wire manufacturers are looking for an upturn in demand from jobbers.

### FERROALLOYS

Sales are at a standstill and specifications have fallen to a new low for the month.

### PIG IRON

Movement of Northern iron remains sluggish and new sales are about on a par with the average so far in July. While a few fair-sized tonnages have been placed, still business is lagging far behind the scale reported to the east of Chicago. A 400-ton lot of Southern iron has been taken at \$11 a ton, Birmingham, with full differentials. This and other smaller sales seem to reaffirm present quotations on this commodity. A cargo of silvery has grounded in the Straits and about 700 tons of salvaged ma-

terial is being offered for sale. There is prospect of a cargo of silvery and one of low phosphorus iron reaching Milwaukee and Chicago docks some time in September.

#### Prices per gross ton at Chicago:

N'th'n No. 2 fdy., sil. 1.75 to 2.25	\$17.50
N'th'n No. 1 fdy., sil. 2.25 to 2.75	18.00
Malleable, not over 2.25 sil.	17.50
High phosphorus	17.50
Lake Super. charcoal, sil. 1.50	\$25.04 to 27.04
S'th'n No. 2 fdy.	17.01
Low phos., sil. 1 to 2, cop-per free	28.50 to 29.20
Silvery, sil. 8 per cent.	24.79 to 26.79
Bess. ferrosilicon, 14-15 per cent	35.79

Prices are delivered consumers' yards except on Northern foundry, high phosphorus and malleable, which are f.o.b. local furnaces, not including an average switching charge of 61c. per gross ton.

### SHEETS

A few more third quarter contracts have been added to producers' books, but spot sales represent by far the largest part of current transactions. Prices established at the first of the month are holding and developments in the last week or two seem to have brought mills to the point where they are convinced that the new prices are firmly fixed. Billings are still being made against old contracts made at the lower prices which prevailed in June. However, these agreements expire at the end of July and, if the market holds as at present, August will see the new schedule in full operation. Production of sheets in this district is holding close to 40 per cent of capacity, on a great number of miscellaneous and small releases. Producers are closely scanning the roofing trade, which should under normal conditions now be in the market for sheets that should be taken for manufacturing operations that precede calls for gutters, downspouts and the like.

Base prices per lb., deliv'd from mill in Chicago: No. 24 black sheets, 2.40c. to 2.50c.; No. 24 galv., 2.95c. to 3.05c.; No. 10 blue ann'd, 2.00c. to 2.10c. Deliv'd prices at other Western points are equal to the freight from Gary, plus the mill prices, which are 5c. per 100 lb. lower than Chicago delivered prices.

### CAST IRON PIPE

Practically all phases of this market are close to a standstill. Public inquiries are very scarce and private work seems suddenly to have been brought to the low point of the pipe-laying season. One project still stands out prominently. It is the sewage treating plant for the Sanitary District at Calumet, near Chicago. Bids on the pumping plant are to be opened July 31, while Aug. 13 has been set as the date for opening bids on the remainder of the plant, which from the viewpoint of pipe ton-

nage will afford some very attractive business. Much of this work will consist of special castings.

Prices per net ton, deliv'd Chicago: Water pipe, 6-in. and over, \$42 to \$44; 4-in., \$45 to \$47; Class A and gas pipe, \$3 extra.

### RAILS AND TRACK SUPPLIES

Standard-section rail buying for 1931 was so light and releases have been so slow in reaching mills that producers are rather skeptical as to when the fall buying movement will begin. Specifications for track fastenings are the best in 60 days, but output remains at the level which has been maintained for the last month or two.

### WIRE PRODUCTS

As July draws to a close the movement of wire and wire products shows no change from the average of previous weeks. Producers are scaling down production so that output now is drifting parallel with shipments, notwithstanding the fact that mill stocks are not so heavy as are usually carried at this time of the year.

Wire mills are producing near 30 per cent of capacity and evidently producers feel that should an upward turn in demand place pressure upon them they could meet the situation by bringing in units that now are idle. The time is near at hand when jobbers and dealers should again enter the market. This development usually occurs about Aug. 1 and sellers are hopeful that this year will not be an exception, though it is possible that tonnages ordered will not bulk so large as in previous years. Use of wire by the manufacturing trade is spotty and on the whole lighter because of smaller demand from automobile manufacturers.

### PLATES

An order for 2000 tons of tank plates stands out prominently in a market that has gradually grown less active as July has advanced. New inquiries for tank plates are light, if one does not take into consideration a few deals which can be made whereby steel sellers would agree to take oil in exchange or stored petroleum as security. A few small inquiries for oil and gas feeder lines are in the market, but on the whole the local pipe market is dull and there is even a possibility that one pipe mill may go down near the end of the month because of lack of orders. There are occasional rumors about what some railroad contemplates doing in the way of buying cars, but these reports cannot be traced to their source and

evidently lack foundation. A smattering of steel is being shipped to car shops and inquiries now before the trade presage no improvement in this direction. The Northern Pacific underframes and superstructure sets will take 3000 tons.

## BOLTS, NUTS AND RIVETS

Specifications received in the last week or ten days have helped in good measure to bring the total for the month well in line with the volume of specifications received in July, 1930. The shipment curve, though still below that for 1930, is not falling as fast as did the curve for last year. In fact a moderate turn upward in business would now show this year's curve crossing above the graph for last year.

## REINFORCING BARS

Illinois' new "prevailing wage scale" law was like a bomb thrown into the reinforcing bar market. Contractors, dealers and mills do not know which way to turn for the reason that much of the public works reinforcing bar tonnage now on contract and on inquiry is affected by the law. A statement by the Attorney General at Springfield suggests that many contracts will be thrown out and readvertised. If the delay is long it may mean that several large tonnages will be carried over to spring because of difficulties encountered during winter construction. Shop operations stand close to 30 per cent of capacity. Some units are on an intermittent schedule, operating for short periods when orders are received. Prices remain weak.

## BARs

With general manufacturing at a low production level, there is a sluggish demand for bars of all kinds. A fair tonnage of mild steel is moving to reinforced concrete bar warehouses, but in practically all other directions shipments are in small and mixed lots. Some price irregularity has arisen where mild steel bars and the merchant product rolled from old rails meet in competition.

Reports are rather favorable as to the movement of farm machinery from warehouses. The large stock of finished machines on hand has been one of the difficulties of this industry. The rail steel bar market is slow and output has dropped to 40 per cent of capacity. Mills are without backlogs and current business is extremely spotty.

## STRUCTURAL MATERIAL

Structural awards, at over 7000 tons, are more than three times the tonnage represented by fresh inquiries. This situation has existed in previous weeks this month and therefore fabricators are rather concerned about the course of events in

the coming month. Over 4000 tons of this week's lettings is for post offices and much of the remainder of the tonnage is for public work in the form of bridges. The absence of industrial buildings and projects of a speculative character is very noticeable in the Midwestern structural market.

## WAREHOUSE BUSINESS

Chicago warehouses are announcing new gage differentials on certain grades of steel sheets. This move is being made to equalize the relationship resulting from new mill classifications on sheets which became effective July 1. Base prices remain unchanged but the resultant net prices show both reductions and increases. One-pass cold-rolled box-annealed sheets in No. 18 gage now carry a differential of 30c. a 100 lb. under base instead of 20c., and the differential on No. 22 gage is 10c. under base instead of 5c. All gages lighter than No. 24, or base, remain unchanged. In the galvanized sheet grades No. 14 gage is 50c. under base instead of 60c., No. 16 is 40c. under base instead of 50c., No. 18 gage is 30c. under base instead of 35c., No. 22 gage is 10c. under base instead of 15c., and No. 30 gage is \$1 over base instead of 90c. This adjustment in galvanized prices is an effort to equalize relationship between galvanized and blue annealed grades.

## COKE

Shipments of by-product foundry coke remain light and spot sales are dull. Prices are firm at \$7.50 a ton, local ovens.

## OLD MATERIAL

Several small transactions have taken place in cast iron borings at \$4 a ton on track. This evidently is a reflection of dealer activity in cov-

ering part of the tonnage needed to meet the requirements of the contract to ship this grade to a Lake Erie steel mill. There is also a stronger tone to steel axles because of reports that a new user will soon begin converting this grade into bars. On the whole the market is very quiet. Shipments of heavy melting steel are near the low point of the year and malleable grades are sluggish.

Much is heard these days about the possibility that scrap will be converted into steel in electric furnaces to be erected near Milwaukee. Scrap dealers are speculating on the effects of a move of this kind on this market. If the developments near Milwaukee are of large size it is thought by some dealers that, not only will some shipments from the Northwest be cut off from Chicago, but Chicago will be called on to furnish certain grades. In any event, dealers are anxious to see this project develop, believing that it will mean more to this market than simply another outlet for scrap.

Prices del'd Chicago dist. consumers:

Per Gross Ton

Basic Open-Hearth Grades:		
Heavy melting steel.....	\$8.50 to	\$9.00
Shoveling steel.....	8.50 to	9.00
Frogs, switches and guards, cut apart, and misc. rails	8.50 to	9.00
Factory hyd. comp. sheets	7.00 to	7.50
Drop forge flashings.....	6.00 to	6.50
No. 1 busheling.....	6.75 to	7.25
Forg'd cast and r'd steel carwheels.....	9.00 to	10.00
Railroad tires, charge box size.....	10.50 to	11.00
Railroad leaf springs cut apart.....	10.50 to	11.00
Axle turnings.....	7.00 to	7.50

Acid Open-Hearth Grades:		
Steel couplers and knuckles	9.75 to	10.25
Coil springs.....	11.50 to	12.00

Electric Furnace Grades:		
Axle turnings.....	7.50 to	8.00
Low phos. punchings.....	10.75 to	11.25
Low phos. plates, 12 in. and under.....	10.50 to	11.00

Blast Furnace Grades:		
Cast iron borings.....	3.75 to	4.00
Short shoveling turnings..	3.75 to	4.25
Machine shop turnings....	3.75 to	4.25

Rolling Mill Grades:		
Rerolling rails.....	10.50 to	11.00

Cupola Grades:		
Steel rails, less than 3 ft..	10.25 to	10.75
Steel rails, less than 2 ft..	11.00 to	11.50
Angle bars, steel.....	9.25 to	9.75
Cast iron carwheels.....	10.00 to	10.50

Malleable Grades:		
Railroad.....	8.50 to	9.00
Agricultural.....	8.50 to	8.75

Miscellaneous:		
*Relaying rails, 56 to 60 lb.	19.00 to	21.00
*Relaying rails, 65 lb. and heavier.....	22.00 to	27.00

Per Net Ton

Rolling Mill Grades:		
Iron angle and splice bars.	8.50 to	9.00
Iron arch bars and transoms.....	10.50 to	11.00
Iron car axles.....	17.50 to	18.50
Steel car axles.....	12.00 to	12.50
No. 1 railroad wrought...	7.00 to	7.50
No. 2 railroad wrought...	7.50 to	8.00
No. 1 busheling.....	6.00 to	6.50
No. 2 busheling.....	4.00 to	4.50
Locomotive tires, smooth..	11.50 to	12.50
Pipes and flues.....	5.50 to	6.00

Cupola Grades:		
No. 1 machinery cast....	9.00 to	9.50
No. 1 railroad cast.....	8.00 to	8.50
No. 1 agricultural cast....	7.00 to	7.50
Stove plate.....	6.25 to	6.75
Grate bars.....	5.50 to	6.00
Brake shoes.....	5.75 to	6.25

\*Relaying rails, including angle bars to match, are quoted f.o.b. dealers' yards.

## Warehouse Prices, f.o.b. Chicago

	Base per Lb.
Plates and structural shapes.....	3.00c.
Soft steel bars.....	2.75c.
Reinforcing bars, billet steel.....	1.55c. to 2.00c.
Rail steel reinforcement—	
For buildings.....	1.45c. to 1.65c.
Highway slabs.....	1.50c.
For bridges and culverts.....	1.65c.
Cold-fin. steel bars and shafting—	
Rounds and hexagons.....	3.10c.
Flats and squares.....	3.60c.
Bands, $\frac{7}{8}$ in. (in Nos. 10 and 12 gages).....	2.95c.
Hoops (No. 14 gage and lighter)...	3.50c.
Hot-rolled annealed sheets (No. 24).....	3.55c.
Galv. sheets (No. 24).....	4.10c.
Hot-rolled sheets (No. 10).....	3.20c.
Spikes ( $\frac{3}{4}$ in. and larger).....	3.45c.
Track bolts.....	4.30c.
Rivets, structural.....	4.00c.
Rivets, boiler.....	4.00c.
	Per Cent Off List
Machine bolts.....	60, 10 and 10
Carriage bolts.....	60, 10 and 10
Coach and lag screws.....	60, 10 and 10
Hot-pressed nuts, sq., tap, or blank,	60, 10 and 10
Hot-pressed nuts, hex., tap, or blank,	60, 10 and 10
No. 8 black ann'l'd wire, per 100 lb. \$3.45	
Com. wire nails, base per keg.....	2.30
Cement c't'd nails, base per keg.....	2.30



# CLEVELAND

## Output Again at 35 Per Cent Rate— Prices Pretty Generally Firm

**C**LEVELAND, July 28.—Dullness in finished steel has become more pronounced the past week with orders and specifications confined to carload lots or smaller tonnages. Many consumers' plants in various lines are shut down for vacations, while the holiday in automobile output caused by suspension of operations by numerous makers has further cut down demand for steel, especially sheets and strip. Railroads and shipbuilding companies usually counted on for considerable steel tonnage are buying virtually nothing at the moment.

After being closed for a week the open-hearth department of the Otis Steel Co. is again running three furnaces, raising the total active furnaces in Cleveland to 12, or 35 per cent of ingot capacity. This is a gain of 9 points, compared with the previous week. Heavy rolled steel products are firm at 1.60c., Pittsburgh, or 1.70c., delivered locally.

### PIG IRON

Total business placed the past week amounted to only a few thousand tons, and there are no sizable inquiries before the trade. Aside from a few foundries making castings for the Plymouth division of the Chrysler Corp., pig iron users supplying the automobile industry are operating at a low rate. Consumers are asking for shipments only for immediate requirements, preferring to see what course business is likely to take before building up depleted stocks. Prices are firm and unchanged. A Southern furnace refused to accept an offer of \$10.50, Birmingham, for a 300-ton order of foundry iron from a Cleveland district melter, holding steadily to its schedule of \$11.

*Prices per gross ton at Cleveland:*  
N'th'n fdy., sil. 1.75 to 2.25.....\$17.00  
S'th'n fdy., sil. 1.75 to 2.25..... 17.01  
Malleable ..... 17.50  
Ohio silvery, 3 per cent..... 25.00  
Stand, low phos., Valley..... 27.00

Prices are f.o.b. furnace except on Southern foundry and silvery iron. Freight rates: 50c. average local switching charge; \$3 from Jackson, Ohio; \$6.01 from Birmingham.

### BARS, SHAPES AND PLATES

The price of 1.65c., Pittsburgh, has practically disappeared, as mills are now quoting 1.60c. for the smallest tonnages. Producers are maintaining quotations of 1.70c. for local delivery. There is an increasing tendency to take billet steel reinforcing bar business at 1.55c., Cleveland, especially in view of the keen competition for the few available orders. The reinforcing bar people believe that the establishment of a Detroit base price on bars will have the effect of ex-

cluding rail steel bars from the Detroit district. The structural market is quiet with little work in prospect during August. Steel mills anticipate a continuation of the present light demand the coming month and would not be surprised if the total volume of bookings dipped further during the early part of August.

### SHEETS

July shipments will compare favorably with those in June, largely on account of the completion of tonnages placed at the old prices. Mills report that there has been no deviation from the new quotations in booking fresh orders, although no large tonnages have appeared to subject them to a severe test. Demand from the jobbing trade has been encouraging, one large maker reporting that its volume from this source in the past month exceeded that in the corresponding period of 1930. Sales of enameled stock to refrigerator manufacturers have been fairly good. Sheet mills are looking for a recession in bookings during August.

### STRIP STEEL

Hot-rolled strip is being firmly maintained at 1.55c., Pittsburgh, for wide and 1.65c. for narrow, although fresh orders have been scarce. Cold-rolled strip is unchanged at 2.15c., Cleveland.

### BOLTS, NUTS AND RIVETS

There have been an increasing number of irregular prices on bolts and nuts made to the jobbing trade, but the general run of buyers has not been affected and still is paying the full schedule. However, the volume of orders has been poor. Demand for rivets is slack.

### COKE

A local dealer is soliciting Connellsville beehive foundry coke contracts

for delivery at current prices up to April 1 of next year. These contracts contain a labor clause which provides that the customer must pay for any increase in production costs necessitated by an upward revision in the wage scale. The customer likewise benefits in the same manner from lower labor expense.

### OLD MATERIAL

The scrap market has been quiet. Machine shop turnings and short shoveling turnings have advanced 25c. a ton, but other items are unchanged. A local steel mill is taking in shipments of blast furnace scrap contracted for a week ago. Dealers believe that the present dullness will persist for the next few weeks.

*Prices per gross ton delivered consumers' yards:*

Basic Open-Hearth Grades:	
No. 1 heavy melting steel..	\$8.50 to \$9.00
No. 2 heavy melting steel..	8.00 to 8.50
Compressed sheet steel...	7.50 to 8.00
Light bundled sheet stampings .....	6.50 to 7.00
Drop forge flashings.....	6.75 to 7.00
Machine-shop turnings....	5.00 to 5.50
Short shoveling turnings..	6.50 to 7.00
No. 1 railroad wrought...	9.50 to 10.00
No. 2 railroad wrought...	10.00 to 10.50
No. 1 busheling .....	6.75 to 7.00
Pipes and flues .....	5.50 to 6.00
Steel axle turnings.....	7.50 to 8.00
Acid Open-Hearth Grades:	
Low phos., billet bloom and slab crops .....	14.00 to 14.50
Blast Furnace Grades:	
Cast iron borings.....	6.50 to 6.75
Mixed borings and short turnings .....	6.50 to 6.75
No. 2 busheling.....	6.00 to 6.25
Cupola Grades:	
No. 1 cast .....	10.00 to 10.50
Railroad grate bars .....	6.00 to 6.50
Stove plate .....	6.00 to 6.50
Rails under 3 ft.....	15.00 to 15.50
Miscellaneous:	
Rails for rolling .....	13.00 to 13.50
Railroad malleable.....	11.00 to 11.25

## Detroit Scrap Firm

**DETROIT, July 28.**—The market on old material in the district is very quiet but firm at present prices. No new business is reported.

*Dealers' buying prices per gross ton, f.o.b. cars, Detroit:*

Hvy. melting and shov. steel .....	\$6.75 to \$7.25
Borings and short turnings .....	4.25 to 4.75
Long turnings .....	3.50 to 4.00
No. 1 machinery cast....	8.00 to 8.50
Automotive cast .....	11.00 to 11.50
Hydraulic comp. sheets....	6.75 to 7.25
Stove plate .....	5.50 to 6.00
New No. 1 busheling....	5.50 to 6.00
Old No. 2 busheling.....	2.50 to 3.00
Sheet clippings .....	3.75 to 4.25
Flashings .....	5.75 to 6.25

### Warehouse Prices, f.o.b. Cleveland

	Base per Lb.
Plates and struc. shapes.....	2.95c.
Soft steel bars .....	2.75c.
Reinforc. steel bars.....	1.75c. to 1.95c.
Cold-fin. rounds and hex.....	3.10c.
Cold-fin. flats and sq.....	3.60c.
Hoops and bands, No. 12 to 14 in. inclusive .....	3.00c.
Hoops and bands, No. 13 and lighter .....	3.55c.
Cold-finished strip.....	*5.55c.
Hot-rolled annealed sheets (No. 24) .....	3.60c.
Galvanized sheets (No. 24).....	4.00c.
Hot-rolled sheets (No. 10).....	3.00c.
No. 9 ann'l'd wire, per 100 lb.....	\$2.25
No. 9 galv. wire, per 100 lb.....	2.70
Com. wire nails, base per keg.....	2.10

\*Net base, including boxing and cutting to length.



# NEW YORK Specifications and New Business Light in Both Iron and Steel

NEW YORK, July 28.—Specific inquiry for pig iron has practically disappeared from the local market, and pending business involves small lots aggregating less than 1000 tons. With foundry melt at practically the low point for the year and with conditions still uncertain, the present negligible interest in pig iron is not considered unusual. Sales for the week totaled 3200 tons, compared with 6500 tons the previous week, and 5000 tons two weeks ago. Prices are nominally unchanged, with Southern iron still being held firmly at \$11, Birmingham. Foreign iron, which has not been a prominent factor in the local district for some months, is being purchased in restricted lots for mixture purposes. Both Indian iron and Dutch iron are quotable at \$18 to \$18.50, base, on dock, present duty paid, port of entry.

It is reported that deliveries of ore to the New England furnace have been stopped, indicating that the blowing out of that stack is imminent.

Prices per gross ton, delivered New York district:

Buffalo No. 2 fdy., sil. 1.75 to 2.25	\$19.41 to \$19.91
*Buff. No. 2, del'd east.	
N. J. No. 2 fdy., sil. 1.75 to 2.25	17.78 to 18.28
East. Pa. No. 2 fdy., sil. 1.75 to 2.25	17.39 to 17.89
East. Pa. No. 2X fdy., sil. 2.25 to 2.75	17.89 to 18.39

Freight rates: \$4.91 from Buffalo, \$1.39 to \$2.52 from eastern Pennsylvania.

\*Prices delivered to New Jersey cities having rate of \$3.28 a ton from Buffalo.

## FINISHED STEEL

Specifications are light and new business is at a minimum. Prices show no change and the new quotations on sheets are apparently holding, although untested. Some important buyers state that they will be pleased if they are forced to pay the new prices. All they are interested in is paying no more than their competitors.

Tin plate shipping orders are holding up rather well, but are expected to decline rather sharply late in August, in line with seasonal influences. By that time the can companies will have most of their supplies in stock or moving and will confine further purchases to "rush" orders.

The completion of summer shutdowns or "vacations" by numbers of industries in this district has commenced to have a favorable effect on steel releases.

Structural steel activity is holding up rather well. An addition to the Bankers Trust Co. building, New York, 10,500 tons, has been awarded to the American Bridge Co. A freight terminal on the west side of New York for the New York Central will

require 14,000 tons, which will be placed soon.

Bids have been opened on 10,000 tons of 18-in. pipe for the West Street express highway, New York. The Passaic Valley Water Commission, Paterson, N. J., will take alternate bids Aug. 3 on 20,575 ft. of 51-in. lock bar or welded steel pipe, or concrete pipe. If steel pipe is bought, 2800 tons of plates will be required. The Carnegie Steel Co. has been awarded 700 tons of sheet piling for the Bankers Trust Co. building addition. Allen N. Spooner & Son Co., New York, is low bidder on the general contract for a sheet steel pile bulkhead, 250 tons, Columbia Street, Erie basin, Brooklyn.

## CAST IRON PIPE

Improved demand for pressure pipe is reflected by a more general interest among municipalities. Chester, Pa., is taking bids until Aug. 14 on 800 tons of 48-in. for a Delaware River outfall sewer, and Mount Joy, Pa., is requesting prices on 200 tons of 6-in. and larger pipe. Roaring Spring, Pa., will open bids Aug. 3 on 100 tons of 8-in. Plans are being drawn up by the Village of Lathams Corners, N. Y., for about 16 miles of 6 to 12-in. pipe, specifications for which will probably be ready next month.

## Warehouse Prices, f.o.b. New York

	Base per Lb.
Plates and struc. shapes	2.70c. to 3.10c.
Soft steel bars, small shapes	2.70c. to 3.10c.
Iron bars	3.24c.
Iron bars, Swed. charcoal	7.00c. to 7.25c.
Cold-fin. shafting and screw stock—	
Rounds and hexagons	3.40c.
Flats and squares	3.90c.
Cold-roll. scrap, soft and quarter hard	4.95c.
Hoops	3.75c.
Bands	3.40c.
Hot-rolled sheets (No. 10)	3.00c. to 3.25c.
Hot-rolled ann'l'd sheets (No. 24*)	3.50c.
Galvanized sheets (No. 24*)	4.00c.
Long terme sheets (No. 24)	5.00c.
Standard tool steel	12.00c.
Wire, black annealed	4.50c.
Wire, galv. annealed	5.15c.
Tire steel, ½ x ½ in. and larger	3.40c.
Smooth finish, 1 to 2½ x ¼ in. and larger	3.75c.
Open-hearth spring steel, bases,	4.50c. to 7.00c.

\*No. 28 and lighter, 36 in. wide, 20c. higher per 100 lb.

	Per Cent Off List
Machine bolts, cut thread:	
¾ x 6 in. and smaller	.65 to .65 and 10
1 x 30 in. and smaller	.65 to .65 and 10

Carriage bolts, cut thread:

¾ x 6 in. and smaller	.65 to .65 and 10
¾ x 20 in. and smaller	.65 to .65 and 10

Boller Tubes:

	Per 100 Ft.
Lap welded, 2-in.	\$19.00
Seamless steel, 2-in.	20.25
Charcoal iron, 2-in.	26.25
Charcoal iron, 4-in.	67.00

R. D. Wood & Co. took 500 tons of 6 to 16-in. for LeRoy, N. Y., and 600 tons of 6 and 8-in. for Southhampton, Mass. Elmira, N. Y., awarded a small lot of 16-in. to an unnamed maker. Prices are nominally held to schedules on small tonnages, but on certain competitive lots concessions of \$1 to \$2 a ton have been made.

Prices per net ton delivered New York: Water pipe, 6-in. and larger, \$32.90; 4-in. and 5-in., \$35.90; 3-in., \$42.90. Class A and gas pipe, \$3 extra.

## REINFORCING BARS

Distributors are quoting billet steel bars at 1.60c. to 1.65c., Pittsburgh, or 1.93c. to 1.98c., delivered New York. While concessions of \$1 a ton from 1.60c., Pittsburgh, still appear on the larger projects, the greater part of present business is at the full market price. New projects are generally small, except for about 346 tons of bars required in an elevated structure for the New York Central Railroad between West Eighteenth and West Thirtieth Streets, New York.

## OLD MATERIAL

A Claymont, Del., consumer has closed on about 5000 tons of No. 1 heavy melting steel, part at \$9.50 and part at \$9 a ton, delivered, or an average price of \$9.25 for the contract. On this contract brokers are offering \$8.50, delivered. Small tonnages are moving to a Phoenixville, Pa., mill, which is paying \$9 a ton, delivered. Although there has been no new buying of heavy breakable cast scrap, brokers with contracts for delivery to Harrisburg, Pa., and Florence, N. J., consumers have advanced buying prices to \$10 a ton, or \$6.50 to \$7 a ton, New York. Other grades continue quiet and prices are generally unchanged.

Dealers' buying prices per gross ton, f.o.b. New York:

No. 1 heavy melting steel	\$5.00 to \$6.25
Heavy melting steel (yard)	3.00 to 3.50
No. 1 hvy. breakable cast	6.50 to 7.00
Stove plate (steel works)	3.75 to 4.00
Locomotive grate bars	3.75 to 4.00
Machine shop turnings	2.00
Short shoveling turnings	2.00
Cast borings (blast fur. or steel works)	2.25
Mixed borings and turnings	1.75 to 2.00
Steel car axles	13.00 to 13.50
Iron car axles	15.50 to 16.00
Iron and steel pipe (1 in. dia., not under 2 ft. long)	6.00 to 6.25
Forge fire	4.50
No. 1 railroad wrought	8.25
No. 1 yard wrought, long	7.25
Rails for rolling	6.00 to 6.50
Stove plate (foundry)	4.50 to 4.75
Malleable cast (railroad)	7.50 to 8.00
Cast borings (chemical)	8.00 to 8.50

Prices per gross ton, deliv'd local foundries:

No. 1 machry. cast	\$11.00 to \$11.50
No. 1 hvy. cast (columns, bldg. materials, etc., cupola size)	9.00 to 9.50
No. 2 cast (radiators, cast boilers, etc.)	8.00 to 8.50

# PHILADELPHIA

## Steel Mill Rates Unchanged— Sizable Plate Orders Placed

**P**HILADELPHIA, July 28.—Steel mill operations are generally unchanged with the average for eastern Pennsylvania at slightly better than 30 per cent of capacity. Orders have not decreased greatly in number, but seldom exceed a carload in size. Bar and sheet prices are being firmly held in a quiet market, but plates and shapes are subject to occasional slight variation when sizable tonnages are offered. Projects requiring substantial steel tonnages are limited, and mills expect but little improvement in the volume of business until after Labor Day.

About 3000 tons of plates in a 10,000,000 cu. ft. gas holder awarded by the United Gas Improvement Co., Philadelphia, to the Bartlett Hayward Co., Baltimore, have been placed with a mill at Conshohocken, Pa. The Atlantic Refining Co., which placed 13 small oil tanks with the Chicago Bridge & Iron Works a week ago, has awarded several additional tanks requiring about 100 tons of plates to the same company. Small fabricated structural steel projects in the market include schools in Camden, N. J., and Marshallton, Del., and hospital buildings at Phillipsburg, N. J., and Allentown, Pa.

### PIG IRON

In a few cases consumers of foundry iron have booked sufficient new business to justify slight increases in rates of operation. Not many foundries, however, are able to operate more than three to four days a week. The quotation for foundry grade continues at \$16.25 a ton, eastern Pennsylvania furnace, with the greater part of current buying limited to carload lots for prompt shipment. Southern foundry iron continues at \$11 a ton, Birmingham, or \$16.25 a ton, on dock, Philadelphia, despite reports of increasing stocks on Southern furnace yards. No action has been taken by the Navy Department to award 224 tons of low phosphorus iron for the Washington Navy Yard, on which the low bid was submitted on furnishing foreign low phosphorus.

#### Prices per gross ton at Philadelphia:

East. Pa. No. 2, 1.75 to 2.25 sil.	\$17.01 to \$17.26
East. Pa. No. 2X, 2.25 to 2.75 sil.	17.51 to 17.76
East. Pa. No. 1X, 18.01 to 18.26	
Basic (del'd east. Pa.)	16.75
Malleable	19.00 to 20.00
Stand. low phos. (f.o.b. east. Pa. furnace)	23.00 to 24.00
Cop. b'rg low phos. (f.o.b. furnace)	22.00 to 23.00
Va. No. 2 plain, 1.75 to 2.25 sil.	22.04
Va. No. 2X, 2.25 to 2.75 sil.	22.54

Prices, except as specified otherwise, are deliv'd Philadelphia. Freight rates: 76c. to \$1.64 from eastern Pennsylvania furnaces; \$4.54 from Virginia furnaces.

### STEEL BARS

Orders are small, consisting for the most part of carloads and smaller lots for prompt shipment. Quotations are unchanged at 1.60c., Pittsburgh, or 1.89c., delivered Philadelphia. Billet steel reinforcing bars are firmer at 1.60c., Pittsburgh, or 1.89c., Philadelphia, as a result of mill announcements to distributors that business taken on a lower basis will not be accepted. Occasional concessions still appear, however, but usually not over \$1 a ton. The contractor for a sewage disposal plant in Elizabeth, N. J., requiring 1500 tons of bars, is Northern States Construction Co., Elizabeth. Rail steel bars are quoted at 1.20c. to 1.30c., Pittsburgh, or 1.49c. to 1.59c., Philadelphia.

### SHAPES

Quotations are somewhat irregular, with ordinary specifications for small lots bringing 1.70c., f.o.b. nearest mill to consumer, or 1.76c., Philadelphia, and the more desirable business subject to concessions; usually not under 1.65c., mill, or 1.71c., Philadelphia. Smaller fabricating shops are bidding on a number of contracts requiring 100 to 400 tons of shapes each, including a high school building in Camden, about 400 tons, and a State hospital building in Allentown, Pa., about 200 tons.

### SHEETS

Consumers are operating at low levels of capacity, with certain exceptions. One of the three leading radio manufacturers in this district is on a production schedule of close to 4000 sets a day, and automobile body and accessory makers here are working at slightly better rates than in recent weeks. On small current business the new sheet bases and extras are being maintained, but a sizable purchase has not yet brought the new prices to a

#### Warehouse Prices, f.o.b. Philadelphia

	Base per Lb.
Plates, ¼-in. and heavier	2.50c.
Structural shapes	2.50c.
Soft steel bars, small shapes, iron bars (except bands)	2.60c.
Reinforc. steel bars, sq. twisted and deform.	2.30c.
Cold-fin. steel, rounds and hex.	3.40c.
Cold-fin. steel, sq. and flats	3.90c.
Steel hoops	3.15c.
Steel bands, No. 12 to ¼-in. inclu.	2.90c.
Spring steel	5.00c.
Hot rolled, box annealed sheets (No. 24)	3.55c.
Galvanized sheets (No. 24)	4.00c.
Hot rolled blue annealed sheets (No. 10)	3.05c.
Diam. pat. floor plates, ¼-in.	5.20c.
Swedish iron bars	6.60c.

These prices are subject to quantity differentials except on reinforcing and Swedish iron bars.

real test. Award is not expected for some weeks of some 200 tons of galvanized sheets for ventilation ducts in the new building for the Philadelphia Savings Fund.

### PLATES

Most orders ranging up to a carload or more are being placed at 1.70c., Coatesville, Pa., or 1.80½c., Philadelphia, but on the large desirable tonnages this price is occasionally shaded \$1 a ton. About 1800 tons of plates required for ship repairs has been awarded by the Navy Department to a Harrisburg, Pa., plate mill, and a Conshohocken, Pa., mill will furnish the 3000 tons of plates required for a gas holder as mentioned.

### IMPORTS

In the week ended July 25 a total of 2551 tons of chrome ore arrived from Portuguese Africa and 4437 tons of pig iron from British India. Steel arrivals included 197 tons of steel bands, 41 tons of structural shapes, and 20 tons of steel bars from France, and 264 tons of shapes, 86 tons of steel bars and 4 tons of bands from Belgium.

### OLD MATERIAL

A mill at Claymont, Del., has closed on upward of 5000 tons of No. 1 heavy melting steel, the greater part at \$9, delivered, and a small portion at \$9.50 a ton, delivered. Meanwhile, the consumer at Nicetown, Pa., has been buying small lots at \$7.50 a ton, delivered on a switching charge in the Philadelphia district. Other grades of scrap are inactive and prices generally unchanged.

#### Prices per gross ton delivered consumers' yards, Philadelphia district:

No. 1 heavy melting steel	\$8.25 to \$9.25
No. 2 heavy melting steel	7.00
No. 1 railroad wrought	10.00 to 10.50
Bundled sheets (for steel works)	6.50
Hydraulic compressed, new	7.00 to 8.00
Hydraulic compressed, old	6.00 to 7.00
Machine shop turnings (for steel works)	5.00 to 6.00
Heavy axle turnings (or equiv.)	8.00 to 8.50
Cast borings (for steel works and roll. mill)	5.00 to 6.00
Heavy breakable cast (for steel works)	9.50 to 10.00
Railroad grate bars	8.00
Stove plate (for steel works)	8.00
No. 1 low phos. hvy. (0.04% and under)	12.00 to 13.00
Couplers and knuckles	11.00
Roller steel wheels	10.50 to 11.00
No. 1 blast furnace	5.50
Wrot. iron and soft steel pipe and tubes (new specific.)	10.50 to 11.00
Shafting	16.50 to 17.00
Steel axles	16.00 to 16.50
No. 1 forge fire	8.00 to 8.50
Cast iron carwheels	12.00 to 12.50
No. 1 cast	11.00 to 11.50
Cast borings (for chem. plant)	12.00 to 12.50
Steel rails for rolling	10.50 to 11.00



# BOSTON

## Various Scrap Grades Advance—Pig Iron Shipments Gaining

BOSTON, July 28.—Pig iron sales approximated 1500 tons. A Massachusetts foundry bought 300 tons of Buffalo iron and 300 tons of Mystic. The Universal Winding Co., Providence, R. I., purchased 250 tons of Buffalo iron, and another Providence concern closed for 250 tons of Mystic. Otherwise sales were in dribbling lots. While purchases were smaller than in the previous week, shipping instructions were considerably larger. The New England weekly melt shows a further slight increase, despite the fact that foundries in general are still operating but two or three days a week. There are no open inquiries in the market, but certain furnace representatives are privately negotiating for round tonnages calling for deliveries extending through 1931.

Foundry iron prices per gross ton deliv'd to most New England points:

*Buffalo, sil. 1.75 to 2.25..	\$19.91
*Buffalo, sil. 2.25 to 2.75..	19.91
†Buffalo, sil. 1.75 to 2.25..	19.28
†Buffalo, sil. 2.25 to 2.75..	19.28
*Ala., sil. 1.75 to 2.25.....	20.11 to 20.61
*Ala., sil. 2.25 to 2.75.....	20.61 to 21.11
†Ala., sil. 1.75 to 2.25.....	16.75
†Ala., sil. 2.25 to 2.75.....	17.25

Freight rates: \$4.91 all rail and \$4.28 rail and water from Buffalo; \$9.61 all rail from Alabama and \$5.75 rail and water from Alabama to New England seaboard.

\*All rail rate.

†Rail and water rate.

### CAST IRON PIPE

R. D. Wood & Co. sold Southampton, Mass., 32,000 ft. of 6 and 8-in. pipe, the largest individual order placed in the past week. The Warren Foundry & Pipe Co. booked about 1500 tons of pipe on new contracts and on contracts placed earlier in the year. Medfield, Mass., will shortly be in the market for \$200,000 worth of pipe and fittings, and several other municipalities indicate they will be in the mar-

ket during August. A New England gas producer this week will close on 250 to 300 tons of gas pipe. Small sizes of Class B pipe are selling at \$32 to \$33 a ton, foundry. Prices obtained for pipe without competition last week ran as high as \$35 a ton for 10 in.

### REINFORCING STEEL

Lettings continue small, recent sales including but two round lots aggregating 450 tons, and approximately 200 tons in small lots. A considerable tonnage is pending, notably for Massachusetts road work, but contractors are slow in covering bar requirements due to a scarcity of funds. Bar prices are holding up well on small lots, but some concessions have been made on round tonnages. From stock billet bars are 3c. a lb., base, for 1-ton to 5-ton lots, 2.40c. for 6 to 99-ton lots, and 2.30c. for 100-ton lots and larger. Rail steel bars are 2.26½c. a lb., delivered Boston rate points.

### OLD MATERIAL

Heavy melting steel, steel turnings, steel mill borings and mixed borings and turnings have been advanced in

sympathy with a strengthening of values in the Pittsburgh district. The higher prices, however, have failed to stimulate buying for Pittsburgh district consumption. The bids of the American Steel & Wire Co., Worcester, Mass., being under the Pittsburgh price level, it has ceased to be a market factor among local brokers. Short steel turnings are \$1.50 to \$1.80 a ton, on cars shipping point, and long turnings are \$1.25 to \$1.50. A few chemical borings are being shipped for which brokers are paying \$7 to \$7.25 a ton on cars, and \$5 to \$5.50 is the market for breakable cast, and \$3.60 for motor blocks.

Buying prices per gross ton, f.o.b. Boston rate shipping points:

No. 1 heavy melting steel..	\$4.50 to \$5.00
Scrap T rails .....	4.00 to 4.50
Scrap girder rails .....	3.00 to 3.50
No. 1 railroad wrought...	7.00 to 7.50
Machine shop turnings...	1.25 to 1.80
Cast iron borings (steel works and rolling mill)	1.50 to 1.75
Bundled skeleton, long...	3.00 to 3.25
Forged flashings .....	5.00 to 5.25
Blast furnace borings and turnings .....	1.50 to 1.75
Forge scrap.....	0.50 to 0.80
Shafting .....	10.00 to 10.50
Steel car axles.....	11.00 to 12.00
Wrought pipe, 1 in. in diameter (over 2 ft. long)	5.00 to 5.25
Rails for rolling.....	7.50 to 8.00
Cast iron borings, chemical	7.00 to 7.25
No. 2 cast .....	5.00 to 5.25

Prices per gross ton deliv'd consumers' yards:

Textile cast .....	\$9.50 to \$10.00
No. 1 machinery cast...	9.50 to 10.00
Stove plate .....	5.00 to 5.25
Railroad malleable .....	13.00 to 13.50

# CINCINNATI

## Pig Iron Buying Gains But Finished Steel and Old Material Are Listless

CINCINNATI, July 28.—A slight buying flurry during the last week brought a better total volume of pig iron business to the local market than during the previous week. New orders called for a total of approximately 2200 tons, of which two for 500 tons of Northern foundry each were placed by central Ohio melters. The gain during the last week has brought July average demand to a little higher level than was anticipated after a slackening appeared during the latter part of June, but the July total is still just slightly under that of the previous month. The trade is without any sizable inquiries and most current orders are being placed without inquiry, since buyers are being made acquainted with price conditions by the frequent visits of sales representatives. Price competition on Northern iron continues to be noticeable in the larger industrial areas of the district, and frequent concessions have been reported. Southern iron, on the other hand, while not enjoying any noticeable demand, is still steady as to prices, and furnace representatives indicate that present schedules will continue to be observed. The district melt is low, with foundries operating

a few small heats a week. Prospects, however, continue to be very good.

Prices per gross ton, deliv'd Cincinnati:

Ala. fdy., sil. 1.75 to 2.25.....	\$14.69
Ala. fdy., sil. 2.25 to 2.75.....	15.19
Tenn. fdy., sil. 1.75 to 2.25.....	14.69
S'th'n Ohio silvery, 8 per cent.....	23.89

Freight rates, \$1.89 from Ironton and Jackson, Ohio; \$3.69 from Birmingham.

### COKE

July shipments of foundry coke have been less than those of June. New

### Warehouse Prices, f.o.b. Cincinnati

Base per Lb.

Plates and struc. shapes.....	3.25c.
Bars, soft steel or iron.....	3.00c.
New billet reinfrc. bars.....	3.00c.
Rail steel reinfrc. bars.....	3.00c.
Hoops .....	3.90c.
Bands .....	3.20c.
Cold-fin. rounds and hex.....	3.50c.
Squares .....	4.00c.
Hot-rolled annealed sheets (No. 24)	3.75c.
Galv. sheets (No. 24).....	4.25c.
Hot-rolled sheets (No. 10).....	3.30c.
Structural rivets .....	4.20c.
Small rivets.....	.60 per cent off list
No. 9 ann'l'd wire, per 100 lb.....	\$3.00
Com. wire nails, base per keg (25 kegs or more).....	2.95
Cement c'd'd nails, base 100 lb. keg	2.95
Chain, per 100 lb.....	10.25
Net per 100 Ft.	
Lap-welded steel boiler tubes, 2-in..	\$16.50
4-in. ....	34.50
Seamless steel boiler tubes, 2-in..	17.50
4-in. ....	36.00



business is infrequent and is generally restricted to a few cars. Prices on by-product foundry coke will continue at about \$9, delivered, in Cincinnati in August.

## FINISHED STEEL

The district finished steel market has lapsed into the usual quiet summer condition. Demand for sheets is at about the same level as in the previous week, with mill production averaging 40 per cent of normal capacity. Buyers are showing no interest by way of inquiry, but are buying sheets as the need arises from their usual sources of supply. Orders are coming in from virtually all the sheet-using fields.

## OLD MATERIAL

With one mill in the district still holding up shipments on scrap and the other mills only taking in small quantities, the market is very quiet. While

dealers are holding as closely as possible to market quotations, they indicate that in many instances purchases may be made for less. Accordingly, present schedules are nominal. Reports that recent railroad lists have brought better prices than heretofore have added a note of optimism in the district market, and dealers anticipate a better demand starting in the early fall.

Dealers' buying prices per gross ton, f.o.b. cars, Cincinnati:

Heavy melting steel.....	\$7.25 to \$7.75
Scrap rails for melting.....	10.25 to 10.75
Loose sheet clippings.....	3.50 to 4.00
Bundled sheets.....	6.75 to 7.25
Cast iron borings.....	3.75 to 4.25
Machine shop turnings.....	4.00 to 4.50
No. 1 busheling.....	5.75 to 6.25
No. 2 busheling.....	3.75 to 4.25
Rails for rolling.....	11.00 to 11.50
No. 1 locomotive tires.....	9.50 to 10.00
No. 2 railroad wrought.....	7.25 to 7.75
Short rails.....	13.00 to 13.50
Cast iron carwheels.....	10.50 to 11.00
No. 1 machinery cast.....	12.50 to 13.00
No. 1 railroad cast.....	11.50 to 12.00
Burnt cast.....	5.25 to 5.75
Stove plate.....	5.25 to 5.75
Brake shoes.....	5.25 to 5.75
Agricultural malleable.....	10.00 to 10.50
Railroad malleable.....	11.00 to 11.50

## ST. LOUIS Pig Iron and Finished Steel Quiet—Low Prices Stimulate Scrap Consumption

ST. LOUIS, July 28.—While foundry melt is about holding the pace of early July, pig iron buying has fallen to a low ebb. Carload lots predominate, no round tonnage of any grade having been taken for two weeks or more. Users seem well supplied for all present needs and are taking no interest whatever in future requirements. Offerings from all quarters are abundant, and with heavy furnace stocks, local melters can see no advantage in augmenting their inventories. Automotive specifications for malleable castings have improved slightly, but are still disappointing. Some requests for deferred iron shipments have come from farm implement interests. Prices remain steady on all grades of iron.

Prices per gross ton at St. Louis:

No. 2 fdy., sil. 1.75 to 2.25, f.o.b. Granite City, Ill.....	\$17.50
Malleable, f.o.b. Granite City.....	17.50
N'th'n No. 2 fdy., deliv'd St. Louis.....	19.66
Southern No. 2 fdy., deliv'd.....	15.42
Northern malleable, deliv'd.....	19.66
Northern basic, deliv'd.....	19.66

Freight rates: 75c. (average) Granite City to St. Louis; \$2.16 from Chicago; \$4.42 from Birmingham.

## FINISHED MATERIAL

Makers and distributors of steel sheets report some new orders booked, all at the new prices. No resistance to speak of has developed, consumers taking what they need without quibbling over the recent advance. Oil country goods continue dull, and no improvement for warehouse material has developed in the general manufacturing trade. Fabricators report a few scattered small jobs, but no lettings of importance. The same situation obtains among distributors of reinforcing concrete bars. Materials

for outdoor engineering projects continue to move in good volume, particularly items going into highway construction. One hundred tons of concrete bars for the Architectural School, Washington University, St. Louis, was awarded to the Laclede Steel Co.

## OLD MATERIAL

A few lots of special material for fill-in purposes and to complete mixtures constituted the extent of consumer purchasing of scrap iron and steel. The market holds steady, however, because of continued activity on the part of dealers who are buying to cover on open contracts or to lay down in their yards. More than the usual amount of scrap, relatively, is being used in melts here, due to the cheapness of that material as compared with pig iron. Prices throughout the list remain steady, though paucity of

## Warehouse Prices, f.o.b. St. Louis

	Base per Lb.
Plates and struc. shapes.....	3.25c.
Bars, soft steel or iron.....	3.00c.
Cold-fin. rounds, shafting, screw stock.....	3.35c.
Hot-rolled annealed sheets (No. 24).....	3.80c.
Galv. sheets (No. 24).....	4.35c.
Hot-rolled sheets (No. 10).....	3.45c.
Black corrug. sheets (No. 24).....	3.85c.
Galv. corrug. sheets.....	4.40c.
Structural rivets.....	4.15c.
Boiler rivets.....	4.15c.
Per Cent Off List	
Tank rivets, 7/8-in. and smaller, 100 lb. or more.....	65
Less than 100 lb.....	60
Machine bolts.....	60 and 10
Carriage bolts.....	60 and 10
Lag screws.....	60 and 10
Hot-pressed nuts, sq., blank or tapped, 200 lb. or more.....	60 and 10
Less than 200 lb.....	50 and 10
Hot-pressed nuts, hex., blank or tapped, 200 lb. or more.....	60 and 10
Less than 200 lb.....	50 and 10

sales has prevented actual testing of certain grades. Country scrap is not moving in volume, and railroad offerings were smaller the past week than in some time. Following were the only lists before the trade: Nickel Plate, 25 carloads; Union Pacific, 200 tons; and Nashville, Chattanooga & St. Louis, 12 cars.

Dealers' buying prices per gross ton, f.o.b. St. Louis district:

Selected heavy melting steel.....	\$8.25 to \$8.75
No. 1 heavy melting or shoveling steel.....	8.00 to 8.50
No. 2 heavy melting or shoveling steel.....	7.00 to 7.75
No. 1 locomotive tires.....	10.50 to 11.00
Misc. stand-sec. rails including frogs, switches and guards, cut apart.....	9.50 to 11.00
Railroad springs.....	10.00 to 10.50
Bundled sheets.....	5.50 to 6.00
No. 2 railroad wrought.....	8.00 to 8.50
No. 1 busheling.....	6.00 to 6.50
Cast iron borings and shoveling turnings.....	5.00 to 5.50
Iron rails.....	8.00 to 8.50
Rails for rolling.....	10.50 to 11.00
Machine shop turnings.....	3.50 to 4.00
Heavy turnings.....	7.00 to 7.50
Steel car axles.....	13.00 to 13.50
Iron car axles.....	17.50 to 18.00
Wrot. iron bars and trans.....	8.25 to 8.75
No. 1 railroad wrought.....	5.25 to 5.75
Steel rails, less than 3 ft.....	12.00 to 12.50
Steel angle bars.....	8.25 to 8.75
Cast iron carwheels.....	7.75 to 8.25
No. 1 machinery cast.....	8.50 to 9.00
Railroad malleable.....	8.00 to 8.50
No. 1 railroad cast.....	8.00 to 8.50
Stove plate.....	7.00 to 7.50
Relay rails, 90 lb. and under.....	16.00 to 16.50
Relay rails, 70 lb. and over.....	20.00 to 21.00
Agricult. malleable.....	7.00 to 7.50

## Youngstown

### Marked Expansion in Activity

YOUNGSTOWN, July 28.—Improved steel company operations for the last week in July, presaging a more active operating rate in August, afford employment to perhaps 1000 more men, as compared with the preceding week. Two hundred workers employed at the Bessemer department of the Youngstown Sheet & Tube Co. are benefited by the resumption of this works, after five weeks' idleness.

Based on steel ingot output, Valley capacity is active at 42 per cent, against 34 per cent the previous week and 58 per cent a year ago. Steel Corporation properties average 44 per cent, against 40 per cent for the independents. Better steel ingot output forecasts broader finishing mill operations next month, and some scrap purchases made recently are against prospects of broader operations.

The picture in the Mahoning Valley, therefore, is one of improvement, with broader employment in prospect and actually at hand. Of 51 independent open-hearth furnaces, 23 are scheduled for melting, with all three Bessemer plants active. All types of pipe mills are operating at 40 per cent. While strip production averages between 40 and 50 per cent, sheet makers are down to 35 per cent. Tin plate capacity is active at a 50 per cent rate.

Steel makers are encouraged by the fact that the usual mid-summer re-

cession, which becomes most pronounced in August, will be less severe this year than customary. Encouraging advices from the automobile industry in Michigan are that summer curtailments by some of the larger factories will be reduced to minimum and in some cases entirely eliminated.

Fabricating plants are averaging 60

to 70 per cent, and higher in some cases. Truscon Steel Co. expects betterment in August over July and has experienced a gain each month since April. Pipe producers look for heavier buying in August and September than heretofore, and expect tonnages now being worked off the books to be replaced.

tons. American Cast Iron Pipe Co. will supply L. Coluccio & Co., Seattle contractor, who was low bidder on 246 tons of Class 250 16-in. pipe for a supply main for Wenatchee, Wash. Through Argenteria & Colorossi, contractors, 784 tons of 8 to 20-in. Class B and C for an East Sixty-fifth Street main in Seattle goes to an unnamed supplier.

## PACIFIC COAST

SAN FRANCISCO, July 27.—The month has progressed far enough to indicate that activity both in warehouse shipments as well as for larger contracts and mill orders will hold well up to June, with the possible exception of reinforcing bars. New inquiries for structural steel, bars, plates and cast iron pipe anticipate continued fair tonnages well into the fall. Prices are firm and are being held with unusual stiffness, considering the keenness of competition for orders and tonnage.

### BARS

In addition to over 1000 tons in public lettings of reinforcing bars during the week, the United States Steel Corp. took 200 tons of merchant bars for delivery to the Mare Island Navy Yard at Vallejo, Cal. New inquiries were few.

### SHAPES

Public lettings for the week were over 3000 tons, with some 8500 tons pending. Over 17,000 tons are now in prospect for inquiry next month. The largest contract reported was to the Wallace Bridge & Structural Steel Co., Seattle, for 800 tons for a bridge at Seattle for the Northern Pacific.

### PLATES

The Board of Supervisors of San Francisco have agreed upon a route for an emergency pipe line of 45,000,000 gal. daily capacity approximately 16 miles in length. Although speci-

## July Activity Holding Well Up to June Levels

cations will not be available until next month, the steel requirement should approximate 10,000 tons. Inquiries are pending from Tacoma for some 300 tons for 2821 ft. of 52-in. welded pipe, and from Vista, Cal., for 250 tons for irrigation main.

### CAST IRON PIPE

Awards of public lettings reported totaled 1100 tons, and pending are 2700

### SHEETS

The price advance of 15c. on galvanized sheets involved in the new differentials of July 1 have been firmly held by all mills. Over 200 tons of No. 24 hot-rolled annealed sheets will be supplied by the Columbia Steel Co. to the B. W. Norton Mfg. Co., Oakland, supplier of 1932 license plates to the State of California. The Guilfoyle Cornice Works is taking 50 tons of galvanized sheets from Dunham, Carrigan & Hayden Co. for sheet metal work on the San Francisco War Memorial Building.

## BIRMINGHAM

BIRMINGHAM, July 28.—Further adjustments in furnace operations are taking place as a result of unimproved conditions in the pig iron market. Demand remains irregular and spotty, with no prospect of early improvement. Quotations still are \$12 to \$13 for district deliveries. Foundries are taking just as little iron as possible, and July will show another increase of furnace yard stocks. On July 23, the Woodward Iron Co. banked its No. 2 furnace at Woodward, leaving two stacks in operation on foundry iron. The Tennessee company on July 23 also blew out Ensley No. 6, which had been on recarburizing iron. These changes reduce the number of active blast furnaces in Alabama at this time to ten.

Prices per gross ton, f.o.b. Birmingham dist. furnaces:

No. 2 fdy., 1.75 to 2.25 sil. \$12.00 to \$13.00  
No. 1 fdy., 2.25 to 2.75 sil. 12.50 to 13.50  
Basic ..... 12.00 to 13.00

### FINISHED STEEL

July has proved a good month for sheet production and deliveries, as a result of the June tonnage booked at the old price for shipment before Aug. 1. Next month is expected to show a marked decline, as some of the business that usually comes in August has now been handled. Demand in other lines is more or less stationary, with about the same tonnage from week to week. The rail mill of the Tennessee company at Ensley was closed down on July 23 for an indefinite period. Three open-hearths at Ensley will also follow, as the present schedule calls for the operation of four at Ensley and four at Fairfield. Last week the Tennessee

## Rail Mill Shut Down—Two Blast Furnaces Put Out

company operated seven at Ensley and five at Fairfield, while the Gulf States Steel Co. increased to three, making a total of 15 active, the largest number since April. Fabricators of structural steel and reinforcing bars in Birmingham are occasionally booking some fair orders, but mostly for small tonnages. The Ingalls Iron Works has booked 300 tons of structural steel for a city viaduct in Atlanta and 250 tons for a Seaboard Air Line Railway bridge at Floyd, Ga.

### CAST IRON PIPE

Oakland, Cal., has placed 1500 tons with the United States Pipe & Foundry Co., while the American Cast Iron Pipe Co. has booked 255 tons from Wenatchee, Wash., 800 tons from Honolulu and 200 tons from the Panama Canal Zone. Demand remains at around 50 per cent of normal. Quotations are unchanged at \$35 to \$36 a ton, base.

### OLD MATERIAL

Inquiries for steel grades were better last week than for several months and it is hoped that some additional tonnage will be placed at an early date. Current sales continue light. No changes have been made in prices.

Prices per gross ton deliv'd Birmingham dist. consumers' yards:

Heavy melting steel..... \$9.50 to \$10.00  
Scrap steel rails..... 9.00  
Short shoveling turnings... 6.50  
Cast iron borings..... (No market)  
Steel plate ..... 7.00  
Steel axles ..... 15.00 to 16.00  
Iron axles ..... 18.00  
No. 1 railroad wrought... 8.00  
Rails for rolling..... 11.50 to 12.00  
No. 1 cast ..... 9.00  
Tramcar wheels ..... 10.00 to 10.25  
Cast iron borings, chem... 13.50

### F.O.B. Warehouse Prices

(Less than 5000 Lb.)

	Base per Lb.		
	San Francisco	Los Angeles	Seattle
Plates and struc. shapes, 1/4-in. and heavier.....	2.80c.	3.00c.	2.40c.
Soft steel bars....	2.80c.	3.00c.	2.40c.
Reinforcing bars....	2.80c.	2.80c.	3.00c.
Hot-rolled annealed sheets (No. 24)...	3.90c.	4.00c.	3.50c.
Hot-rolled sheets (No. 10).....	3.40c.	3.50c.	3.00c.
Galv. sheets (No. 24).....	4.40c.	4.20c.	3.85c.
Struc. rivets, 1/2 in. and larger, less than 1000 lb....	5.00c.	5.00c.	5.50c.
Special nails: common 4 to 60d; smooth box 4 to 20d; finish 6 and 8d; base per keg.	\$2.55	\$2.45	\$2.45
Other wire nails, base per keg....	2.80	2.70	2.65
Cement c'd nails, 100-lb. keg.....	2.65	2.70	2.65



## BUFFALO Two Additional Open-Hearths Lighted— Heavy Barge Movement of Scrap from East

BUFFALO, July 28.—There are few definite pig iron inquiries before the market, but melters have inquired for between 5000 and 6000 tons predicated on whether they obtain prospective castings orders. A 400-ton inquiry for foundry from the East mentioned last week has been placed and it is understood that one-half the tonnage came to Buffalo. At least one local producer is adhering to a minimum of \$16, Buffalo, on Eastern business, but is booking very little at this price. It is probable that the going price on Eastern tonnage is \$15.50, Buffalo, or \$15. Sales are a little bit better than during the month of June, but shipments of iron are not so heavy. Mystic Iron Works will go out of blast, it is reported here, about Aug. 15.

### Prices per gross ton, f.o.b. furnace:

No. 2 fdy., sil. 1.75 to 2.25.....	\$17.00
No. 2X fdy., sil. 2.25 to 2.75.....	17.50
No. 1 fdy., sil. 2.75 to 3.25.....	18.50
Malleable, sil. up to 2.25.....	17.50
Basic.....	17.00
Lake Superior charcoal.....	25.28

### FINISHED STEEL

The Lackawanna plant of the Bethlehem Steel Co. last week increased its open-hearth operations from 10 to 12 furnaces. This rate is expected to continue for an indefinite period. Republic Steel Corp. continues to operate one furnace; Wickwire-Spencer Steel Co., three; Gould Coupler Works, one. Seneca Iron & Steel Co. is operating at approximately 50 per cent. An addition to the General Hospital in Buffalo will require 500 tons of structural steel. The reinforcing bar market is slow.

### OLD MATERIAL

The market continues dull. The principal consumer is still offering \$7.50 and \$9 for No. 2 heavy melting steel and No. 1 heavy melting steel respectively, without getting much tonnage. The barge movement of scrap iron to Buffalo from the East has been quite heavy since the beginning of the season, and it is estimated that approximately 100,000 tons of No. 1 heavy melting steel and No. 2 heavy melting steel have entered Buffalo from points east. The strengthening of the Pittsburgh market is

beginning to make more competition on shipments from the central part of the State.

### Prices per gross ton, f.o.b. Buffalo consumers' plants:

Basic Open-Hearth Grades:	
No. 1 heavy melting steel.....	\$9.00
No. 2 heavy melting scrap.....	7.50
Scrap rails.....	\$10.00 to 10.50
Hydraul. comp. sheets.....	7.50
No. 2 hydraul. comp. sheets.....	7.00
Hand bundled sheets.....	7.00
Drop forge flashings.....	7.50
No. 1 busheling.....	7.50
Hvy. steel axle turnings.....	8.50 to 9.50
Machine shop turnings.....	4.50 to 5.00
No. 1 railroad wrought.....	7.50 to 8.00

Acid Open-Hearth Grades:	
Knuckles and couplers.....	11.00 to 11.50
Coil and leaf springs.....	11.00 to 11.50
Rolled steel wheels.....	11.00 to 11.50
Low phos. billet and bloom ends.....	13.00 to 14.00

Electric Furnace Grades:	
Short shov. steel turnings.....	6.00 to 6.50

Blast Furnace Grades:	
Short mixed borings and turnings.....	6.00 to 6.50
Cast iron borings.....	6.00 to 6.50
No. 2 busheling.....	4.50 to 5.00

Rolling Mill Grades:	
Steel car axles.....	15.00 to 15.50
Iron axles.....	16.00 to 16.50

Cupola Grades:	
No. 1 machinery cast.....	9.75 to 10.00
Stove plate.....	8.00 to 8.25
Locomotive grate bars.....	7.00 to 7.50
Steel rails, 3 ft. and under.....	13.00 to 13.50
Cast iron carwheels.....	11.50 to 12.00

Malleable Grades:	
Industrial.....	10.00 to 10.50
Railroad.....	10.00 to 10.50
Agricultural.....	10.00 to 10.50

Special Grades:	
Chemical borings.....	9.00 to 9.50

## Canada

### Demand Remains Very Light

TORONTO, July 28.—With the holiday season in full swing, business in the pig iron markets is dull and featureless. Sales for the week were in single car lots, with no transaction reported in connection with future delivery. It is generally understood, however, that plants are running on light stocks and are coming into the market at regular intervals for supplies, thus maintaining a fairly steady demand for spot delivery. Some improvement is reported in the production of foundry and malleable grades, with furnaces stocking fairly good tonnages. The output of basic iron, however, is being gradually reduced. Prices are unchanged.

### Prices per gross ton:

Delivered Toronto	
No. 1 fdy., sil. 2.25 to 2.75.....	\$22.60
No. 2 fdy., sil. 1.75 to 2.25.....	22.10
Malleable.....	22.60

Delivered Montreal	
No. 1 fdy., sil. 2.25 to 2.75.....	\$24.00
No. 2 fdy., sil. 1.75 to 2.25.....	23.50
Malleable.....	24.00
Basic.....	20.50

### STRUCTURAL STEEL

A steady demand prevails for steel in lots under 500 tons, but no large tonnage contracts have been booked recently. Some big orders are pend-

ing, however, in connection with bridge building programs in the Province of Quebec. Fabricators are operating at about 60 per cent of capacity.

### OLD MATERIAL

Mills continue to hold purchases to small tonnage lots of steel scrap. Foundries and other consumers of iron scrap are maintaining a spasmodic demand for such lines as machinery cast, stove plate and malleable scrap, with other grades in a state of stagnation. Purchases are generally confined to small lots on spot delivery account. No future buying is being done. Dealers are out of the market for supplies and prices remain unchanged.

### Dealers' buying prices for old material: Per Gross Ton

	Toronto	Montreal
Heavy melting steel.....	\$7.00	\$6.00
Rails, scrap.....	7.00	6.00
No. 1 wrought.....	6.00	8.00
Machine shop turnings.....	2.00	2.00
Boiler plate.....	5.00	4.50
Heavy axle turnings.....	2.50	2.50
Cast borings.....	2.00	2.00
Steel borings.....	2.00	2.00
Wrought pipe.....	2.00	2.00
Steel axles.....	7.00	9.00
Axles, wrought iron.....	7.00	11.00
No. 1 machinery cast.....	10.00	10.00
Stove plate.....	8.00	8.00
Standard carwheels.....	8.50	8.50
Malleable.....	8.00	8.00

### Per Net Ton

No. 1 mach'ry cast.....	11.00	.....
Stove plate.....	9.00	.....
Standard carwheels.....	10.00	.....
Malleable scrap.....	9.00	.....

## Decline in Electric Equipment Orders

WASHINGTON, July 24.—Shipments of mining and industrial electric locomotives in the second quarter of the year totaled 86 units, valued at \$432,867, against 77, valued at \$599,927, in the first quarter, according to reports received by the Bureau of the Census from nine manufacturers.

Orders for electric hoists in June totaled 241 units, valued at \$126,762, against 327, valued at \$158,355, in May, according to reports received by the Bureau of the Census from 13 leading manufacturers.

Shipments of electric industrial trucks and tractors in June totaled 75 units, 50 for domestic use and 25 exported, against May shipments of 69 units, all for domestic account, according to reports received from 10 leading manufacturers by the Bureau of the Census.

"Facts for Foundrymen" in its second edition has just appeared as published by the Niagara Falls Smelting & Refining Co., Niagara Falls, N. Y. It furnishes the latest information concerning the composition and uses of the special non-ferrous products of this company.

### Warehouse Prices, f.o.b. Buffalo

	Base per Lb.
Plates and struc. shapes.....	3.25c.
Soft steel bars.....	3.00c.
Reinforcing bars.....	2.65c.
Cold-fin. flats and sq.....	3.65c.
Rounds and hex.....	3.15c.
Cold-rolled strip steel.....	5.25c.
Hot-rolled annealed sheets (No. 24).....	3.70c.
Galv. sheets (No. 24).....	4.10c.
Bands.....	3.35c.
Hoops.....	3.90c.
Hot-rolled sheets (No. 10).....	3.50c.
Com. wire nails, base per keg.....	\$2.45
Black wire, base per 100 lb.....	3.20



# ▲▲ Semi-Finished Steel, Raw Materials, Bolts and Rivets ▲▲

## MILL PRICES OF SEMI-FINISHED STEEL

### Billets and Blooms

	Per Gross Ton
Rerolling, 4-in. and under 10-in., Pittsburgh	\$29.00 to \$30.00
Rerolling, 4-in. and under 10-in., Youngstown	29.00 to 30.00
Rerolling, 4-in. and under 10-in., Cleveland	29.00 to 30.00
Rerolling, 4-in. and under 10-in., Chicago	31.00 to 32.00
Forging quality, Pittsburgh	35.00

### Sheet Bars

(Open-Hearth or Bessemer)

	Per Gross Ton
Pittsburgh	\$29.00 to \$30.00
Youngstown	29.00 to 30.00
Cleveland	29.00 to 30.00

### Slabs

(8 in. x 2 in. and under 10 in. x 10 in.)

	Per Gross Ton
Pittsburgh	\$29.00 to \$30.00
Youngstown	29.00 to 30.00
Cleveland	29.00 to 30.00

### Skelp

(F.o.b. Pittsburgh or Youngstown)

	Per Lb.
Grooved	1.60c. to 1.65c.
Universal	1.60c. to 1.65c.
Sheared	1.60c. to 1.65c.

### Wire Rods

(Common soft, base)

	Per Gross Ton
Pittsburgh	\$35.00
Cleveland	35.00
Chicago	36.00

## PRICES OF RAW MATERIAL

### Ores

Lake Superior Ores, Delivered Lower Lake Ports

	Per Gross Ton
Old range Bessemer, 51.50% iron	\$4.80
Old range non-Bessemer, 51.50% iron	4.65
Mesabi Bessemer, 51.50% iron	4.65
Mesabi non-Bessemer, 51.50% iron	4.50
High phosphorus, 51.50% iron	4.40

Foreign Ore, c.i.f. Philadelphia or Baltimore

	Per Unit
Iron ore, low phos., copper free, 55 to 58% iron, dry, Spanish or Algerian	.8c. to 9c.
Iron ore, low phos., Swedish, average 68% iron	10.00c.
Iron ore, basic or foundry, Swedish, average 65% iron	9.00c.
Iron ore, basic and foundry, Russian, average 63% iron	9.00c.
Manganese ore, washed 52% manganese, from the Caucasus	25c. to 27c.
Manganese ore, African or Indian, 50 to 52%	24c. to 26c.
Manganese ore, Brazilian, 46 to 48%	22c. to 24c.
Tungsten ore, high grade, per unit, in 60% concentrates	\$12.00 to \$12.50

	Per Gross Ton
Chrome ore, 45% Cr <sub>2</sub> O <sub>3</sub> crude, c.i.f. Atlantic seaboard	\$20.00
Chrome ore, 48% Cr <sub>2</sub> O <sub>3</sub> crude, c.i.f. Atlantic seaboard	22.50

### Coke

	Per Net Ton
Furnace, f.o.b. Connellsville prompt	\$2.40
Foundry, f.o.b. Connellsville prompt	\$3.25 to 4.50
Foundry, by-product, Ch'go ovens	7.50
Foundry, by-product, New England, del'd	10.50
Foundry, by-product, Newark or Jersey City, delivered	8.70 to 9.10
Foundry, by-product, Phila.	9.00
Foundry, Birmingham	5.00
Foundry, by-product, St. Louis, f.o.b. ovens	8.00
Foundry, by-product, del'd St. Louis	9.00

### Coal

	Per Net Ton
Mine run steam coal, f.o.b. W. Pa. mines	\$1.40 to \$1.50
Mine run coking coal, f.o.b. W. Pa.	1.50 to 1.60
Gas coal, 3-in., f.o.b. Pa. mines	1.70 to 1.80
Mine run gas coal, f.o.b. Pa. mines	1.50 to 1.60
Steam slack, f.o.b. W. Pa. mines	.90 to 1.00
Gas slack, f.o.b. W. Pa. mines	1.00 to 1.10

### Ferromanganese

	Per Gross Ton
Domestic, 80%, seaboard	\$80.00 to \$85.00
Foreign, 80%, Atlantic or Gulf port, duty paid	\$80.00 to 85.00

\*Minimum price quoted for lots of 2000 tons or more.

### Spiegeleisen

	Per Gross Ton Furnace
Domestic, 19 to 21%	\$28.00 to \$30.00

### Electric Ferrosilicon

	Per Gross Ton Delivered
50%	\$83.50
75%	130.00
	Per Gross Ton Furnace
10%	\$35.00
11%	37.00
	Per Gross Ton Furnace
12%	\$39.00
14 to 16%	31.00

### Bessemer Ferrosilicon

	Per Gross Ton
F.o.b. Jackson County, Ohio, Furnace	
10%	\$25.00
11%	26.00
12%	27.00
	Per Gross Ton
13%	\$29.00
14%	31.00
15%	33.00

### Silvery Iron

	Per Gross Ton
F.o.b. Jackson County, Ohio, Furnace	
6%	\$19.00 to \$21.00
7%	19.50 to 21.50
8%	20.00 to 22.00
9%	20.50 to 22.50
10%	21.00 to 23.00
11%	\$22.00 to \$24.00
12%	23.00 to 25.00
13%	25.00 to 27.00
14%	27.00 to 29.00
15%	29.00 to 31.00

Delivered prices at Chicago are about 50c. a ton below this schedule.

### Other Ferroalloys

Ferrotungsten, per lb. contained metal	
del'd, carloads	\$1.08
Ferrotungsten, less carloads	\$1.15 to 1.25
Ferrocromium, 4 to 6% carbon and up, 65 to 70% Cr., per lb. contained Cr. delivered, in carloads	11.00c.
Ferrocromium, 2% carbon	17.00c. to 17.50c.
Ferrocromium, 1% carbon	19.00c. to 20.00c.
Ferrocromium, 0.10% carbon	24.50c. to 26.00c.
Ferrocromium, 0.06% carbon	26.50c. to 28.00c.
Ferrovanadium, per lb. contained vanadium, f.o.b. furnace	\$3.15 to \$3.65
Ferrocobalt, 15 to 18%, per net ton, f.o.b. furnace, in carloads	\$160.00
Ferrophosphorus, electric or blast furnace material, in carloads, 18%, Rockdale, Tenn., base per gross ton	91.00
Ferromolybdenum, per lb. contained Mo., delivered	1.00
Calcium molybdate, per lb. contained Mo., delivered	85c.

## MILL PRICES OF BOLTS, NUTS, RIVETS AND SET SCREWS

### Bolts and Nuts

(F.o.b. Pittsburgh, Cleveland, Birmingham or Chicago)

	Per Cent Off List
Machine bolts	73 and 10
Carriage bolts	73 and 10
Lag bolts	73 and 10
Plow bolts, Nos. 1, 2, 3 and 7 heads	73 and 10
Hot-pressed nuts, blank or tapped, square	73 and 10
Hot-pressed nuts, blank or tapped, hexagons	73 and 10
C.p.e. and t. square or hex. nuts, blank or tapped	73 and 10
Washers*	7.00c. to 6.75c. per lb. off list

\*F.o.b. Chicago, New York and Pittsburgh.

†Bolts with rolled thread up to and including 3/8 in. x 6 in. take 10 per cent lower list prices.

### Bolts and Nuts

	Per Cent Off List
Semi-finished hexagons nuts	73 and 10
Semi-finished hexagons castellated nuts, S.A.E.	73 and 10
Stove bolts in packages, P'gh.	80, 10, 10 and 5
Stove bolts in packages, Ch'go.	80, 10, 10 and 5
Stove bolts in pkgs., Cleveland	80, 10, 10 and 5
Stove bolts in bulk, P'gh.	80, 10, 10, 5 and 2 1/2
Stove bolts in bulk, Ch'go.	80, 10, 10, 5 and 2 1/2
Stove bolts in bulk, Cleveland	80, 10, 10, 5 and 2 1/2
Tire bolts	60, 10 and 10

Discounts of 73 and 10 per cent off on bolts and nuts apply on carload business with jobbers and large consumers.

### Large Rivets

(1/2-in. and larger)

	Base per 100 Lb.
F.o.b. Pittsburgh or Cleveland	\$2.75
F.o.b. Chicago	2.85

### Small Rivets

(3/8-in. and smaller)

	Per Cent Off List
F.o.b. Pittsburgh	70, 10 and 5
F.o.b. Cleveland	70, 10 and 5
F.o.b. Chicago	70, 10 and 5

### Cap and Set Screws

(Freight allowed up to but not exceeding 50c. per 100 lb. on lots of 200 lb. or more)

	Per Cent Off List
Milled cap screws	80, 10, 10 and 5
Milled standard set screws, case hardened	80 and 5
Milled headless set screws, cut thread	75 and 10
Upset hex. head cap screws, U.S.S.S. thread	85 and 10
Upset hex. cap screws, S.A.E. thread	85 and 10
Upset set screws	80, 10 and 5
Milled studs	70

# Mill Prices of Finished Iron and Steel Products

## Iron and Steel Bars

### Soft Steel

	Base per Lb.
F.o.b. Pittsburgh mill	1.60c.
F.o.b. Chicago	1.70c. to 1.80c.
Del'd Philadelphia	1.80c. to 1.94c.
Del'd New York	1.93c. to 1.98c.
F.o.b. Cleveland	1.65c. to 1.70c.
F.o.b. Lackawanna	1.70c. to 1.75c.
F.o.b. Birmingham	1.70c. to 1.75c.
C.i.f. Pacific ports	2.10c.
F.o.b. San Francisco mills	2.10c.

### Billet Steel Reinforcing

F.o.b. P'gh mills, 40, 50, 60-ft.	1.60c.
F.o.b. Birmingham, mill lengths	1.75c.
F.o.b. Cleveland	1.55c. to 1.60c.

### Rail Steel

F.o.b. mills, east of Chicago dist.	1.30c. to 1.35c.
Del'd Chicago Heights mill	1.60c. to 1.65c.
Del'd Philadelphia	1.49c. to 1.59c.

### Iron

Common iron, f.o.b. Chicago	1.70c. to 1.80c.
Refined iron, f.o.b. P'gh mills	2.75c.
Common iron, del'd Philadelphia	2.09c.
Common iron, del'd New York	2.14c.

## Tank Plates

	Base per Lb.
F.o.b. Pittsburgh mill	1.60c.
F.o.b. Chicago	1.70c. to 1.80c.
F.o.b. Birmingham	1.70c. to 1.75c.
Del'd Cleveland	1.78 1/2 c.
Del'd Philadelphia	1.80 1/2 c.
F.o.b. Coatesville	1.70c.
F.o.b. Sparrows Point	1.70c.
F.o.b. Lackawanna	1.70c.
Del'd New York	1.88c.
C.i.f. Pacific ports	2.00c.

## Structural Shapes

	Base per Lb.
F.o.b. Pittsburgh mill	1.60c.
F.o.b. Chicago	1.70c. to 1.80c.
F.o.b. Birmingham	1.70c.
F.o.b. Lackawanna	1.70c.
F.o.b. Bethlehem	1.70c.
Del'd Cleveland	1.78 1/2 c.
Del'd Philadelphia	1.71c. to 1.76c.
Del'd New York	1.85 1/2 c.
C.i.f. Pacific ports	2.05c.

## Hot-Rolled Hoops, Bands and Strips

	Base per Lb.
6 in. and narrower, Pittsburgh	1.65c.
Wider than 6 in., P'gh	1.55c.
6 in. and narrower, Chicago	1.75c.
Wider than 6 in., Chicago	1.65c.
Cooperage stock, P'gh	1.75c. to 1.85c.
Cooperage stock, Chicago	1.85c. to 1.95c.

## Cold-Finished Steel

	Base per Lb.
Bars, f.o.b. Pittsburgh mill	2.10c.
Bars, f.o.b. Chicago	2.10c.
Bars, Cleveland	2.10c.
Bars, Buffalo	2.10c.
Shafting, ground, f.o.b. mill	*2.45c. to 3.40c.
Strips, P'gh	2.15c.
Strips, Cleveland	2.15c.
Strips, del'd Chicago	2.43c.
Strips, Worcester	2.30c.
Fender stock, No. 20 gage, Pittsburgh or Cleveland	3.20c.

\*According to size.

## Wire Products

	(Carload lots, f.o.b. Pittsburgh and Cleveland)
To Manufacturing Trade	
Bright wire	2.20c.
Spring wire	3.20c.

### To Jobbing Trade

	Base per Lb.
Smooth annealed wire	2.25c. to 2.35c.
Smooth galvanized wire	2.70c. to 2.80c.
Polished staples	2.25c. to 2.35c.
Galvanized staples	2.50c. to 2.60c.
Barbed wire, galvanized	2.45c. to 2.55c.
Woven wire fence, per net ton	\$60.00

	Base per Keg
Standard wire nails	\$1.80 to \$1.90
Smooth coated nails	1.80 to 1.90
Galvanized nails	3.80 to 3.90

### To Retail Trade

	Base per Lb.
Bright wire	2.30c. to 2.40c.
Smooth annealed wire	2.40c. to 2.50c.
Smooth galvanized wire	2.90c. to 3.00c.

	Base per Keg
Standard wire nails	\$1.90 to \$2.00
Cement coated nails	1.90 to 2.00
Galvanized nails	3.90 to 4.00

	Base per Lb.
Polished staples	2.45c. to 2.55c.
Galvanized staples	2.70c. to 2.80c.
Barbed wire, galvanized	2.65c. to 2.75c.
Woven wire fence, per net ton	\$65.00

Anderson, Ind., mill prices are ordinarily \$1 a ton over Pittsburgh base; Duluth, Minn., and Worcester, Mass., mill \$2 a ton over Pittsburgh, and Birmingham mill \$3 a ton over Pittsburgh.

## Sheets

### Hot-Rolled

	Base per Lb.
No. 10, f.o.b. Pittsburgh	1.70c.
No. 10, f.o.b. Chicago mills	1.80c.
No. 10, del'd Philadelphia	1.99c.
No. 10, f.o.b. Birmingham	1.85c.
No. 10, c.i.f. Pacific Coast ports	2.33c.

(Note: To above prices are added extras for annealing and for width over 48 in., and for less than five tons of each gage or size.)

### Hot-Rolled Annealed

No. 24, f.o.b. Pittsburgh	2.40c.
No. 24, f.o.b. Chicago mills	2.50c.
No. 24, del'd Philadelphia	2.69c.
No. 24, f.o.b. Birmingham	2.55c.
No. 24, c.i.f. Pacific Coast ports	2.88c.

### Heavy Cold-Rolled

No. 10 gage, f.o.b. Pittsburgh	2.35c.
No. 10 gage, f.o.b. Chicago mills	2.45c.
No. 10 gage, del'd Philadelphia	2.64c.
No. 10 gage, f.o.b. Birmingham	2.50c.

### Light Cold-Rolled

No. 20 gage, f.o.b. Pittsburgh	2.95c.
No. 20 gage, f.o.b. Chicago mills	3.05c.
No. 20 gage, del'd Philadelphia	3.24c.
No. 20, f.o.b. Birmingham	3.10c.

### Automobile Body Sheets

No. 20, f.o.b. Pittsburgh	3.10c.
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### Steel Furniture Sheets

No. 10, f.o.b. Pittsburgh	2.75c.
No. 20, f.o.b. Pittsburgh	3.35c.

(Prices on furniture stock include stretcher leveling but not resquaring.)

### Galvanized Sheets

No. 24, f.o.b. Pittsburgh	2.90c.
No. 24, f.o.b. Chicago Mills	3.00c.
No. 24, del'd Philadelphia	3.19c.
No. 24, f.o.b. Birmingham	3.05c.
No. 24, c.i.f. Pacific Coast ports	3.38c.

### Long Ternes

No. 24, unassorted, 8-lb. coating, f.o.b. P'gh	3.15c.
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### Vitreous Enameling Stock

No. 10, f.o.b. Pittsburgh	3.10c.
No. 20, f.o.b. Pittsburgh	3.60c.

### Tin Mill Black Plate

No. 28, f.o.b. Pittsburgh	2.55c. to 2.65c.
No. 26, Chicago mills	2.65c. to 2.75c.

## Tin Plate

	Base per Box
Standard cokes, f.o.b. P'gh district mills	\$5.00
Standard cokes, f.o.b. Gary	5.10

## Terne Plate

(F.o.b. Morgantown or Pittsburgh)  
(Per Package, 20 x 28 in.)

8-lb. coating I.C. \$10.30	25-lb. coating I.C. \$15.20
15-lb. coating I.C. 12.90	30-lb. coating I.C. 16.00
20-lb. coating I.C. 14.00	40-lb. coating I.C. 17.80

## Alloy Steel Bars

(F.o.b. maker's mill)

Alloy Quantity Bar Base, 2.65c. per Lb.	
S.A.E. Series	Alloy Differential
2000 (1 1/2% Nickel)	\$0.25
2100 (1 1/4% Nickel)	0.55
2300 (3/4% Nickel)	1.50
2500 (5% Nickel)	2.25
3100 Nickel Chromium	0.55
3200 Nickel Chromium	1.35
3300 Nickel Chromium	3.80
3400 Nickel Chromium	3.20
4100 Chromium Molybdenum (0.15 to 0.25 Molybdenum)	0.50
4100 Chromium Molybdenum (0.25 to 0.40 Molybdenum)	0.70
4600 Nickel Molybdenum (0.20 to 0.30 Molybdenum, 1.25 to 1.75 Nickel)	1.05
5100 Chromium Steel (0.60 to 0.90 Chromium)	0.35
5100 Chromium Steel (0.80 to 1.10 Chromium)	0.45
5100 Chromium Spring Steel	0.20
6100 Chromium Vanadium Spring Steel	1.20
9250 Silicon Manganese Spring Steel (flats)	0.25
Rounds and squares	0.50
Chromium Nickel Vanadium	1.50
Carbon Vanadium	0.95

Above prices are for hot-rolled steel bars, forging quality. The differential for cold-drawn bars is 1/2 c. a lb. higher, with standard classification for cold-finished alloy steel bars applying. For billets 4 x 4 to 10 x 10 in., the price for a gross ton is the net price for bars of the same analysis.

Billets under 4 x 4 in. carry the steel bar base. Slabs with a sectional area of 16 in. or over carry the billet price. Slabs with sectional area of less than 16 in. or less than 2 1/2 in. thick, regardless of sectional area, take the bar price.

## Rails

	Per Gross Ton
Standard, f.o.b. mill	\$43.00
Light (from billets), f.o.b. mill	34.00
Light (from rail steel), f.o.b. mill	32.00

## Track Equipment

### Base per 100 Lb.

Spikes, 3/4 in. and larger	\$2.70
Spikes, 1/2 in. and larger	2.70
Spikes, boat and barge	2.90
Tie plate, steel	1.95
Angle bars	2.75
Track bolts, to steam railroads	\$3.80 to 4.00
Track bolts, to jobbers, all sizes, per 100 count	73 per cent off list

## Welded Pipe

Base Discounts, f.o.b. Pittsburgh District and Lorain, Ohio, Mills

Inches	Steel	Galv.	Inches	Black	Galv.
1/4	47	21 1/2	1 1/2 and 1 3/4	23	5
1/2 to 3/4	53	27 1/2	2 1/2 to 3 1/2	28	11
1	58	44 1/2	4 to 6	30	17
1 1/4	62	50 1/2	7 and 8	29	16
1 to 3	64	52 1/2	9 to 12	26	11

### Butt Weld, extra strong, plain ends

1 1/4	43	26 1/2	1 1/2 and 1 3/4	23	7
1/2 to 3/4	49	32 1/2	2 1/2 to 3 1/2	28	12
1	55	44 1/2	4 to 6	31	18
1 1/4	60	49 1/2	7 and 8	31	17
1 to 1 1/2	62	51 1/2	9 to 12	21	8
2 to 3	63	52 1/2			

### Lap Weld, extra strong, plain ends

2	55	44 1/2	2	29	13
2 1/2 to 4	59	48 1/2	2 1/2 to 4	34	20
4 1/2 to 6	58	47 1/2	4 1/2 to 6	33	19
7 to 8	54	41 1/2	7 and 8	31	17
9 and 10	47	34 1/2	9 to 12	21	8
11 and 12	46	33 1/2			

On carloads the above discounts on steel pipe are increased on black by one point, with supplementary discounts of 5 and 2 1/2%, and on galvanized by 1 1/2 points, with supplementary discounts of 5 and 2 1/2%. On iron pipe, both black and galvanized, the above discounts are increased to jobbers by one point with supplementary discounts of 5 and 2 1/2%.

Note.—Chicago district mills have a base two points less than the above discounts. Chicago delivered base is 2 1/2 points less. Freight is figured from Pittsburgh, Lorain, Ohio, and Chicago district mills, the billing being from the point producing the lowest price to destination.

## Boiler Tubes

Base Discounts, f.o.b. Pittsburgh

Steel	Charcoal Iron
2 in. and 2 1/4 in.	38
2 1/2 in.—2 3/4 in.	46
3 in.	52
3 1/2 in.—3 3/4 in.	54
4 in.	67
4 1/2 in. to 6 in.	66
	3 1/2 in. to 3 3/4 in.
	18
	4 1/2 in.
	20
	21

On lots of a carload or more, the above base discounts are subject to a preferential of two fives on steel and of 10 per cent on charcoal iron tubes. Smaller quantities are subject to the following modifications from the base discounts:

Lap Welded Steel—Under 10,000 lb., 6 points under base and one five; 10,000 lb. to carload, 4 points under base and two fives. Charcoal Iron—Under 10,000 lb., 2 points under base; 10,000 lb. to carload, base and one five.

### Standard Commercial Seamless Boiler Tubes

Cold Drawn	Hot Rolled
1 in.	61
1 1/4 to 1 1/2 in.	53
1 3/4 in.	37
2 to 2 1/4 in.	32
2 1/2 to 2 3/4 in.	40
2 and 2 1/4 in.	38
2 1/2 and 2 3/4 in.	46
3 in.	52
	3 1/4 to 3 1/2 in.
	48
	4 in.
	51
	4 1/2, 5 and 6 in.
	40

Beyond the above base discounts a preferential discount of 5 per cent is allowed on carload lots. On less than carloads to 10,000 lb., base discounts are reduced 4 points with 5 per cent preferential; on less than 10,000 lb., base discounts are reduced 6 points, with no preferential. No extra for lengths up to and including 24 ft. Sizes smaller than 1 in. and lighter than standard gages take the mechanical tube list and discounts. Intermediate sizes and gages not listed take price of next larger outside diameter and heavier gage.

## Seamless Mechanical Tubing

	Per Cent Off List
Carbon, 0.10% to 0.30% base (carloads)	55
Carbon, 0.30% to 0.40% base	50
Plus differential for lengths over 18 ft. and for commercial exact lengths. Warehouse discounts on small lots are less than the above.	



# ▲▲▲ Non-Ferrous Metal Markets ▲▲▲

## Metals Inactive—Copper Sales Small—Tin Reflects European Unsettlement

NEW YORK, July 28.

### COPPER

While custom smelters have been quoting electrolytic copper at 7.75c. per lb., delivered Connecticut Valley, and a fair tonnage was offered in one instance by a second hand at 7.62½c., delivered, primary producers are maintaining 8c., delivered Connecticut Valley, and the brass and ingot manufacturers are basing their quotations on this level. Despite the availability of copper at under 8c., delivered, producers are not inclined to lower their price in the belief that a further reduction would not stimulate the market. Foreign buying in the past week has been negligible, and total export sales for July are not expected to be much more than 15,000 tons. The price of Copper Exporters, Inc., continues at 8.25c., c.i.f. usual foreign ports, but foreign holders of copper are reported selling in Europe at a price equivalent to about 8.12½c., c.i.f. port. Two of the important copper producers have suspended operations for the summer and it is not considered likely that they will resume in the fall unless there is a decided improvement in the copper market in the meantime. Lake copper is quiet, with quotations ranging from 8c. to 8.12½c., New York.

### TIN

The Central European financial situation continues to affect transactions, and the market here, reflecting weakness in the London market, receded during the week from 24.25c., New York, to a low of 24c. on Saturday, with transactions limited to small lots. On Monday afternoon, however, the London market for spot standard tin advanced 10s. a ton to £108 15s. and this was reflected in a stronger tone here with prompt shipment tin quoted at 24.25c., New York. Future standard is at £110 17s. 6d. and spot Straits at £110 7s. 6d. The Singapore price is £113 2s. 6d. a ton. British warehouse stocks decreased only 46 tons this week to a total of 31,797 tons, despite a 100-ton shipment from Liverpool to the United States. Shipments from Singapore to July 25 have been 6550 tons, which has brought an upward revision in the estimated total shipments for the month from 6500 tons to about 7500 tons.

### THE WEEK'S PRICES. CENTS PER POUND FOR EARLY DELIVERY

	July 28	July 27	July 25	July 24	July 23	July 22
Lake copper, New York.....	8.00	8.00	8.00	8.00	8.00	8.00
Electrolytic copper, N. Y.*.....	7.50	7.50	7.50	7.50	7.50	7.50
Straits tin, spot, N. Y. ....	24.25	24.05	....	24.00	24.20	24.25
Zinc, East St. Louis.....	3.87½	3.87½	3.87½	3.87½	3.87½	3.90
Zinc, New York.....	4.22½	4.22½	4.22½	4.22½	4.22½	4.25
Lead, St. Louis.....	4.22½	4.22½	4.22½	4.22½	4.22½	4.22½
Lead, New York.....	4.40	4.40	4.40	4.40	4.40	4.40

\*Refinery quotation; price ¼c. higher delivered in the Connecticut Valley.

Aluminum, 98 to 99 per cent pure, 22.90c. a lb., delivered.  
Nickel, electrolytic cathode, 35c. a lb., delivered; shot and ingot, 36c. a lb., delivered.  
Antimony, 6.65c. to 6.75c. a lb., New York.

### LEAD

Current demand is small, with most of the buying coming from corrodors. Consumers in general are well covered in respect to immediate needs as a result of heavy June buying, which totaled about 56,000 tons. Some interest is exhibited by buyers in forward business, principally September delivery, and the current market price of 4.22½c., St. Louis, is quoted for this shipment.

### ZINC

Following offerings early in the week by second hands at 3.87½c., St. Louis, the market generally settled to this level, although certain producers have not altered their quota-

tion from the 3.90c. basis. As there has been no buying of consequence either at 3.90c. or 3.87½c., St. Louis, the price is untested, and buyers show no interest in forward requirements.

### ANTIMONY

Quotations are slightly irregular, ranging from 6.65c. to 6.75c. a lb., c.i.f. New York, duty paid, for prompt shipment Chinese metal, to about 6.50c., c.i.f., for future delivery. Buying continues limited, and importers place the total sales of Chinese antimony so far this year at about 1100 tons, compared with 3500 tons in more normal periods. This is attributed in part to a larger use of metal recovered from scrap and slightly increased production in this country.

### New York, Chicago or Cleveland Warehouse

#### Delivered Prices, Base per Lb.

High brass .....	15.50c.
*Copper, hot rolled, base sizes.....	17.87½c.
<b>Seamless Tubes—</b>	
Brass .....	20.37½c.
Copper .....	20.37½c.
Brass Rods .....	13.75c.
Brazed Brass Tubes.....	24.37½c.

\*Extra for cold-rolled, 3c. per lb.

### New York Warehouse

#### Delivered Prices, Base per Lb.

Zinc sheets (No. 9), casks	9.00c. to 9.50c.
Zinc sheets, open.....	10.00c. to 10.50c.

### Metals from New York Warehouse

#### Delivered Prices, per Lb.

Tin, Straits pig.....	26.50c. to 27.50c.
Tin, bar.....	28.50c. to 30.50c.
Copper, Lake .....	10.00c. to 11.00c.
Copper, electrolytic.....	9.50c. to 10.00c.
Copper, casting.....	9.25c. to 9.75c.
Zinc, slab.....	5.00c. to 5.50c.
Lead, American pig.....	5.25c. to 6.25c.
Lead, bar .....	7.00c. to 8.00c.
Antimony, Asiatic .....	9.50c. to 10.50c.
Aluminum No. 1 ingots for remelting (guaranteed over 99% pure).....	20.00c. to 22.00c.
Alum. ingots, No. 12 alloy .....	19.00c. to 21.00c.
Babbitt metal, commercial grade .....	20.00c. to 30.00c.
Solder, ½ and ½.....	17.50c. to 18.50c.

### Metals from Cleveland Warehouse

#### Delivered Prices, per Lb.

Tin, Straits pig.....	29.25c.
Tin, bar .....	31.75c.
Copper, Lake .....	9.13c.
Copper, electrolytic .....	8.75c.
Copper, casting .....	8.50c.
Zinc, slab .....	5.50c. to 5.75c.
Lead, American pig.....	5.25c.
Lead, bar .....	7.75c.
Antimony, Asiatic .....	10.00c.
Babbitt metal, medium grade.....	15.00c.
Babbitt metal, high grade.....	34.00c.
Solder, ½ and ½.....	19.00c.

### Old Metals, Per Lb., New York

Buying prices represent what large dealers are paying for miscellaneous lots from smaller accumulators and selling prices are those charged consumers after the metal has been properly prepared for their uses. (All prices are nominal because of uncertain condition of market.)

	Dealers' Buying Prices	Dealers' Selling Prices
Copper, hvy. crucible	6.00c.	6.75c.
Copper, hvy. and wire	5.75c.	6.50c.
Copper, light and bottoms .....	4.75c.	5.75c.
Brass, heavy.....	3.25c.	4.00c.
Brass, light.....	2.50c.	3.50c.
Hvy. machine composition .....	4.75c.	5.50c.
No. 1 yel. brass turnings .....	3.50c.	4.25c.
No. 1 red brass or compos. turnings..	4.25c.	5.00c.
Lead, heavy.....	3.25c.	3.75c.
Zinc .....	1.50c.	2.00c.
Sheet aluminum.....	9.25c.	11.25c.
Cast aluminum.....	3.50c.	5.50c.



# FABRICATED STRUCTURAL STEEL

## New Projects of 55,000 Tons Include Freight Terminal and Elevated Structure—32,000 Tons Awarded

NEW projects requiring fabricated structural steel total 55,000 tons this week, compared with 49,500 tons a week ago, and 19,000 tons two weeks ago. Included are 14,000 tons for a freight terminal and 7500 tons for an elevated structure in New York, for the New York Central Railroad, 6000 tons for a Bronx County court house in New York, 2500 tons for a vocational school in the Borough of Richmond, New York, 1300 tons for a grade crossing separation in Los Angeles, and 1200 tons for a Union Pacific Railroad bridge at Clearwater, Cal.

Bookings of 32,000 tons compare with 17,000 tons a week ago, and 119,500 tons two weeks ago, when the 86,000 ton Golden Gate bridge was included. The foremost award is 10,200 tons for an addition to the Bankers Trust Co. building, 14 Wall Street, New York. Other awards of size are 4100 tons for the South Tenth Street bridge in Pittsburgh, 2400 tons for a post office in Louisville, Ky., and 1200 tons for a track elevation on the Pere Marquette Railroad in Dearborn, Mich. Awards follow:

### North Atlantic States

CANTON-WESTWOOD-DEDHAM, MASS., 200 tons, State bridge, to Palmer Steel Co.  
EVERETT, MASS., 160 tons, high school, to Boston Structural Steel Co.  
WATERTOWN, MASS., 125 tons, academy, to Boston Structural Steel Co.  
WESTON, MASS., 115 tons, standpipe, to Chicago Bridge & Iron Works.  
NEW HAVEN, CONN., 369 tons, memorial building, to Palmer Steel Co.  
NEWTON, MASS., 493 tons, City Hall and war memorial, to New England Structural Steel Co.  
STATE OF NEW YORK, 204 tons, highway bridge, to American Bridge Co.  
NEW YORK, 10,200 tons, addition to Bankers Trust Co. building, 14 Wall Street, to Post & McCord; steel to be fabricated by American Bridge Co.  
STATE OF NEW YORK, 250 tons, highway bridge, to Lackawanna Steel Construction Co.  
NEW YORK, 100 tons, subway tunnel work, East River, to American Bridge Co.  
NEW YORK, 750 tons, public school No. 129, to Easton Structural Steel Co.  
NEW YORK, 202 tons, garage at 348 West Twenty-seventh Street, to Frederick Steel Co.  
CANANDAIGUA, N. Y., 149 tons, Veterans' Hospital, to McClintic-Marshall Corp.  
HARRISBURG, PA., 350 tons, Y.M.C.A. building, to Bauman Iron Works.  
WASHINGTON, 250 tons, National Geographic Society building, to Easton Structural Steel Co.  
ARCOLA, PA., 178 tons, girder for bridge, to McClintic-Marshall Corp.  
BETHLEHEM, PA., 163 tons, Union Street bridge, to Bethlehem Fabricators, Inc.  
PITTSBURGH, 220 tons, mill and office building for Pittsburgh Cut Stone Co., to McClintic-Marshall Corp.  
PITTSBURGH, 4100 tons, South Tenth Street bridge, to American Bridge Co.

### The South

HOLCOMB, W. VA., 130 tons, highway bridge across Cherry River, to Vincennes Bridge Co.  
BOLDMAN, KY., 250 tons, compressor station for United Fuel Gas Co., to Pittsburgh Bridge & Iron Works.  
SHREVEPORT, LA., 370 tons, Post Office, to Jones & Laughlin Steel Corp.  
KEY WEST, FLA., 160 tons, Post Office, to McClintic-Marshall Corp.

ATLANTA, GA., 300 tons, city viaduct, to Ingalls Iron Works.  
FLOYD, GA., 250 tons, viaduct for Seaboard Air Line, to Ingalls Iron Works.  
LOUISVILLE, KY., 2400 tons, Post Office, to Wheeling Structural Steel Co.  
FORT WORTH, TEX., 1200 tons, Post Office, to an unnamed bidder.  
BRAZOS, TEX., 600 tons, beam spans for highway bridge, to McClintic-Marshall Corp.  
HOUSTON, TEX., 526 tons, Post Office, to Houston Structural Steel Co.

### Central States

DEARBORN, MICH., 1200 tons, track elevation for Pere Marquette Railroad, to American Bridge Co.  
PORT HURON, MICH., 300 tons, bridge, to Wisconsin Bridge & Iron Co.  
LAFAYETTE, IND., 320 tons, Post Office, to McClintic-Marshall Corp.  
MONTEVIDEO, MINN., 240 tons, bridge, to American Bridge Co.  
READSTOWN, WIS., 300 tons, bridge, to American Bridge Co.

### Western States

MADERA COUNTY, CAL., 241 tons, State highway bridge across Fresno River involving steel H piling, to Gutleben Bros., Oakland, Cal.  
SALT LAKE CITY, 860 tons, additions to Post Office, to McClintic-Marshall Corp.  
LOS ANGELES, 350 tons, Vernon-Downey bridge, to Consolidated Steel Co.  
SEATTLE, 800 tons, Northern Pacific bridge, to Wallace Bridge & Structural Steel Co.  
SEATTLE, 150 tons, machinery mart building, to Isaacson Iron Works.  
ALBUQUERQUE, N. M., 165 tons, Veterans' Hospital, to Darbyshire-Harvie Co., El Paso, Tex.  
LOS ANGELES, 500 tons, John L. Alden apartments, to Consolidated Steel Co.

### Canada

HAMILTON, ONT., 1500 tons, high level bridge over Canadian National Railways tracks, to Hamilton Bridge Co.

### STRUCTURAL PROJECTS PENDING

Inquiries for fabricated steel work include the following:

### North Atlantic States

SPRINGFIELD, MASS., 500 tons, natural history museum.

AUBURN, MASS., 140 tons, State bridge.  
CAMBRIDGE, MASS., 275 tons, Harvard memorial chapel.  
STATE OF MAINE, 100 tons, three bridges.  
NEW YORK CENTRAL RAILROAD, 14,000 tons, superstructure of freight terminal, New York.  
NEW YORK CENTRAL RAILROAD, 7500 tons, elevated structure in New York between West Eighteenth and West Thirtieth Streets; bids open Aug. 15.  
NEW YORK, 6000 tons, Bronx County Court House, 158th Street and Mott Avenue.  
NEW YORK, 2500 tons, vocational school in Borough of Richmond.  
NEW YORK, 600 tons, addition to the Manufacturers' Trust Co. building, 45 Beaver Street.  
NEW YORK, 150 tons, garage at 539 West Twentieth Street.  
NEWARK, N. J., 200 tons, telephone company building on Lyons Avenue.  
NEWARK, 250 tons, Second Presbyterian Church.  
CAMDEN, N. J., 250 tons, State armory at Seventh Street and Cooper River.  
CAMDEN, 400 tons, high school addition.  
MARSHALLTON, DEL., 100 tons, public school.  
PHILLIPSBURG, N. J., 100 tons, Nurses' Home for State Hospital.  
ALLENTOWN, PA., 200 tons, Allentown State Hospital building.  
ATLANTIC CITY, N. J., 100 tons, apartment building at Atlantic and Connecticut Avenues.  
BALTIMORE, 200 tons, bridge at Loney's Lane; bids open Aug. 5.  
RADNOR, PA., 100 tons, St. Martin's Episcopal Church.  
MCADOO, PA., unstated tonnage, high school.  
STATE OF NEW JERSEY, 1000 tons, highway bridges.  
AUBURN, N. Y., 700 tons, high school.  
BUFFALO, 500 tons, addition to General Hospital.

### Central States

ST. PAUL, MINN., 400 tons, dental building at University of Minnesota.  
MADISON, WIS., 1200 tons, new United States Forest Products Laboratory; J. P. Cullen & Co., Janesville, Wis., low bidder on general contract.  
MILWAUKEE, 120 tons, Matthew Keenan Health Center; C. Hennecke Co., Milwaukee, low bidder.

### Western States

VALLEJO, CAL., 550 tons, battery and shop building for Mare Island Navy Yard.  
SAN FRANCISCO, 750 tons, sheds on Piers 23, 38 and 42, State harbor.  
ALAMEDA, CAL., 1000 tons, Owens-Illinois Glass Co. factory.  
SACRAMENTO, 600 tons, Post Office.  
KEDDIE, CAL., 300 tons, State highway bridge.  
LOS ANGELES, 1300 tons, grade separation at First Street and Glendale Boulevard.  
LOS ANGELES, 10,000 tons, Union Station.  
LOS ANGELES, 500 tons, Zobelein apartment building, Santa Barbara and Figueroa Streets.  
LONG BEACH, CAL., 200 tons, overhead crossing at Orange and Hill Streets.  
LONG BEACH, 300 tons, public market.  
CLEARWATER, CAL., 1200 tons, Union Pacific bridge.  
GLENDALE, CAL., 400 tons, Post Office.  
OAKLAND, CAL., 225 tons, Pier 5 shed.  
PORTLAND, 446 tons, transmission towers for Portland General Electric Co.  
HYDER, ALASKA, 500 tons, transmission towers for Portland Canal Power Co.

### Canada

TORONTO, 250 tons, addition to Danforth Technical School.

# Continental Steel Business Depressed By Result of Debt Conference

(By Cable)

LONDON, ENGLAND, July 27.

**H**OLIDAY influences are retarding any possible revival of the iron and steel industry that might have resulted from the London conference, and no improvement is expected before fall. Meanwhile Continental steel market inactivity has been accentuated by the result of the conference, and the outlook is uncertain.

British idle ship tonnage, tied up at British ports, now totals 743 vessels of 4,750,000 deadweight tons, an increase for the year of 84 per cent. Shipworkers' unions have declined to accept the reduction of wages announced by shipbuilders, but the employers assert that a reduction will be effective Sept. 1.

In company with other leaders of the steel industry, Henry Bond, chairman of the board, Richard Thomas, Ltd., met last week in Swansea and denounced the politicians who concentrate their efforts on making things more difficult for industry.

It was emphasized that Britain has 2,500,000 unemployed, and although it is the most highly taxed nation, revenue from taxation is not balancing expenditures.

Industries, the meeting pointed out, are being strangled by taxation, drifting into a condition where they can no longer obtain capital necessary to development. It was recommended that a tariff board be established.

Italian banks have formed a con-

**Dnieprostroi hydroelectric project expected to begin partial operation next May.**

\* \* \*

**Italian banks form consortium to finance Italian sales to Soviet Union.**

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**British idle ship tonnage in British ports now totals 743 vessels of 4,750,000 deadweight tons.**

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**Polish and Italian rail mills compete with International Rail Makers' Association.**

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**India reported planning export of steel plates to Japan to offset declining pig iron business.**

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sortium to finance jointly Italian sales to the Soviet. The Russian Dnieprostroi hydroelectric plant is expected to begin partial operation by next May.

The rated capacity of associated iron and steel works now building in the Dnieprostroi district is 1,000,000 tons of pig iron, 21,000 tons of ferroalloys, 160,000 tons of electric steel, 15,000 tons of aluminum and 1000 tons of magnesium.

The Ford Motor Co. has suspended operations at its Cologne works,

which recently opened, because of the German financial situation.

The Continental Steel Cartel meeting has not yet been fixed, but it may be held in the next few days. Certain Belgian works have reopened their books, willing to accept steel orders at lower prices, but buyers are cautious in placing business for forward delivery.

British pig iron consumers are buying cautiously for immediate needs, as they expect price reductions. Cleveland makers, however, refuse concessions except on sales to Scottish consumers.

Hematite iron prices are steadier, makers having booked some fairly large domestic contracts, but export business can be negotiated at concessions.

Tees shipyards are expecting a few ship contracts, but the flow of steel specifications to mills is generally slow, and steel works are operating only part time. Export sales are negligible. Tin plate is quiet, partly because of the Central European financial situation, but inquiries suggest that overseas requirements are accumulating.

German raw steel output in June was 779,000 tons. Luxemburg output in June was 172,000 tons of pig iron with 24 furnaces in blast at the end of the month, and 175,000 tons of raw steel.

Czechoslovakian production in June was 105,000 tons of pig iron and 147,000 tons of raw steel.

## British and Continental European Export Prices per gross ton, f.o.b. United Kingdom Ports, Hamburg and Antwerp with the £ at \$4.8665 (par)

### British Prices, f.o.b. United Kingdom Ports

Ferromanganese, export.	£9 0s.		\$43.74
Billets, open-hearth.....	4 17½	to £5 7½s.	23.69 to \$26.12
Black sheets, Japanese specifications .....	10 5		49.82
Tin plate, per base box..	0 13½	to 0 14	3.25 to 3.40
Steel bars, open-hearth...	7 17½	to 8 7½	1.71 to 1.81
Beams, open-hearth.....	7 7½	to 7 17½	1.60 to 1.71
Channels, open-hearth...	7 12½	to 8 2½	1.66 to 1.76
Angles, open-hearth.....	7 7½	to 7 17½	1.60 to 1.71
Black sheets, No. 24 gage	8 10		1.84
Galvanized sheets, No. 24 gage .....	9 7½	to 9 10	2.03 to 2.06

### Continental Prices, f.o.b. Antwerp or Hamburg

Foundry iron, 2.50 to 3.00 per cent sil., 1.00 per cent and more phos. ....	£2 8s.	to £2 9s.	\$11.66 to \$11.91
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Billets, Thomas .....	£3 5s.	to £3 7s.	\$15.80 to \$16.28
Wire rods, low C., No. 5 B.W.G. ....	4 15	to 5 0	23.09 to 24.30
Rails, light .....	6 0		29.20
Black sheets, No. 31 gage, Japanese .....	11 5	to 12 12	54.68 to 58.32
Steel bars, merchant....	3 11	to 3 12	0.77 to 0.78
Beams, Thomas, British standard (nominal)...	3 8½	to 3 10	0.74 to 0.76
Channels, Thomas, American sections .....	5 12	to 5 14	1.24 to 1.26
Angles, Thomas, 4-in. and larger, over ¾-in. thick .....	3 9	to 3 10	0.75 to 0.76
Angles, Thomas, 3-in....	3 11	to 3 12	0.77 to 0.78
Hoops and strip steel over 6-in. base.....	4 5		0.94
Wire plain, No. 8 gage..	5 0	to 5 1¼	1.09 to 1.10
Wire, barbed, 4-pt. No. 12 B.W.G. ....	8 10		1.87



## Output of United Steel Works Drops

DÜSSELDORF, GERMANY, July 15.—According to the second quarter report of the Vereinigte Stahlwerke A. G. (United Steel Works), pig iron output was 780,000 tons, compared with 800,000 tons in the first quarter; steel production was 900,000 tons, compared with 950,000 tons in the first quarter; coal output was 4,240,000 tons, against a first quarter total at 4,690,000 tons, and coke production was 1,250,000 tons, compared with 1,450,000 tons. Of total steel production about 43 per cent was exported, compared with 42 per cent in the first three months. The number of employees was reduced by 5000 during the quarter. Total orders on books at the end of June were only 55.3 per cent of the total at the end of June, 1930. The report does not include subsidiary companies of the Vereinigte Stahlwerke A. G.

## India Reported Selling Plates to Japan

YOKOHAMA, JAPAN, June 26.—As exports of Indian pig iron to Japan have been decreasing in recent years and the prices at which it could be sold to Japanese users has also declined, the Tata Iron & Steel Co. is said to be planning export of steel plates in place of pig iron. Recently there have been negotiations between the Tata works and the Japanese-Indian Trading Co., Ltd., in Osaka, Japan, and a preliminary shipment is reported of 1000 tons of plates, sold at 48 yen (\$23.70) a ton, c.i.f. Japanese port.

The Japanese import duty on steel plates is 18.60 yen (\$9.19) per ton. The current market on steel plates in Japan is about 57 yen (\$28.16) per ton.

## Italy Not Negotiating Agreement on Bearings

A recent report from Hamburg, Germany, that Swedish and Italian manufacturers of ball and roller bearings have been negotiating for an agreement is denied by the Societa Anonima Officine di Villar Perosa of Torino, Italy. The company, which is a large manufacturer in Italy with branch companies and agencies in foreign markets, states that there have been no discussions between Italian and other ball and roller bearing makers.

## Polish Rail Mills Low on Export Orders

HAMBURG, GERMANY, July 15.—As soon as the decision of the International Rail Makers' Association not to reduce the price of rails became known, the Polish industry, which is not a member of the association, began a vigorous campaign for foreign rail orders. A contract for 25,000 tons of rails has been taken for the Dutch State Railways at less than the association quotation, and offers are stated to have been made to South American countries at about £1 (\$4.86) per ton under the official price. An inquiry for which competition is keen calls for 40,000 tons of rails for the Argentine State Railways.

## Japan May Sell Rails to Soviet Union

YOKOHAMA, JAPAN, June 26.—Negotiations are reported between the Mitsubishi Trading Co. and the Seitetsu Jo (Government Steel Works) for appointment of the former as agent in the sale of 75- to 100-lb. rails to the Soviet Union. Soviet requirements are understood to be largely for 125-lb. sections, but the Government Works does not as yet roll this weight.

## Italian Mills Seek Export Rail Orders

BERLIN, GERMANY, July 15.—Italian steel mills have entered the export field seeking orders for rails, and are quoting overseas railroads lower prices than the schedule established by the International Rail Makers' Association, of which Italy is not a member.

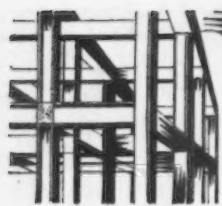
## German Steel Mill Plans Large Improvement

HAMBURG, GERMANY, July 16.—Decision of the Dillinger Hüttenwerke, at Dillingen in the Saar, to expend about \$2,400,000 this year on modernization of equipment and expansion of capacity for finished products is bringing favorable reaction in German steel and financial quarters. This is said to be the first Continental steel works this year to announce plans for improvements.

Through the modern harbor of Alexandria, a seaport for more than 1000 years, moves about 90 per cent of Egypt's foreign trade.







# PLANT EXPANSION AND EQUIPMENT BUYING



## Better Sentiment in Evidence

**A**LTHOUGH the market continues comparatively listless so far as actual transactions are concerned, there seems to be a definite improvement in sentiment in respect to better demand in the fall.

Inquiries are somewhat more numerous; in Pittsburgh, especially, they are a source of encouragement, a number of companies being said to be contemplating fair-size purchases. The fruition of much of this inquiry will depend no doubt on the general business situation; but, notwithstanding, it is felt that seasonal improve-

ment in many lines will bring out some orders, enough perhaps to register an increase as compared with recent months. Inquiry from automotive shops continues to improve slightly, but comparatively little action is following the quotations. In New England, prospective business is stated to include some high-priced equipment for large plants.

A shop in the Chicago district is in the market for 10 or more presses and interest in similar equipment is shown by manufacturers of cans and electrical fixtures.



### NEW YORK

While there is a moderate number of inquiries for single machine tools, actual purchase is usually postponed until the prospective buyer shall find some improvement in general business conditions. In consequence, July business is placed by most sellers well under the June total. Manufacturers in certain branches, especially electric refrigeration, are maintaining fair production schedules, but are not in need of tools for expansion or replacement at present. No action has been taken by the Navy Department on 17 lathes, bids on which were recently opened, but award is generally expected to be distributed to several makers. In the past week three engine lathes have been awarded by the Government for lighthouse service on Staten Island, New York. Bids were opened on this business some months ago.

### PITTSBURGH

Inquiry for machine tools is still the most encouraging feature of the market. No lists of importance have appeared, but a number of companies are said to be considering fair-sized purchases in August or September.

While some of this buying will depend upon the trend of general business, the usual seasonal improvement in the fall will undoubtedly bring out some orders.

Makers of heavy machinery and equipment in this district have slowed down operations a little since the first of the month and their backlogs have declined to some extent. The possibility of additional buying of this kind of equipment by steel companies is hardly as good as a year ago. One large steel company is said to be considering the installation of an electric-welding pipe mill.

### CHICAGO

A slightly larger volume of sales and heavier inquiries are bringing renewed life to the local machine tool market. The Chicago Board of Education has ordered 23 13-in. South Bend lathes and a 16-in. shaper for the Austin High School. One more lathe is to be bought to complete this list. The Hegler Zinc Co., Danville, Ill., has ordered a 16-in. Monarch lathe. One user is in the market for about 10 presses and manufacturers of cans and electrical fixtures are interested in similar equipment. For the most part, jobbing shops remain quiet, though

## Pick-Up in Inquiry and Other Factors Point to Better Fall Machinery Business —Boston and Chicago Schools Take Lathes

The Chicago Board of Education has ordered 23 lathes. Bids for lathes required by the Boston School Commission have been closed, the low bidder to receive the contract in the near future. Lathes for lighthouse servicing on Staten Island, New York, have been awarded, but no action has yet been taken on the 17 lathes for the Navy Department.

Installation of equipment for the manufacture of electrically-welded pipe is said to be under consideration by a large steel company in the Pittsburgh district.

tool makers show more activity by the addition of a few more workers.

### NEW ENGLAND

Although dealers' sales have been few the past week, a note of optimism exists. Certain inquiries and negotiations have led the trade to believe that enough buying of single and group tools will develop before Sept. 1 to give the market a suggestion of activity. Prospective purchasers include large as well as small tool users; some large plants give indication of requiring high-priced equipment. Lynd-Farquhar Co., Boston, was low bidder for lathes required by the Boston school commission and will be awarded the contract later. Used tool sales are still confined to small and inexpensive equipment generally, but buying appears to have quickened slightly. Small tool sales have dropped off, partly because of plant vacations.

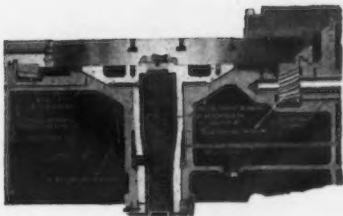
### CINCINNATI

The machine tool market continues dull. Orders for single tools provide for operation of plants at about 30 to 35 per cent of normal, but demand is without feature. Inquiry is in fair volume, but buyers show no greater

**BULLARD**

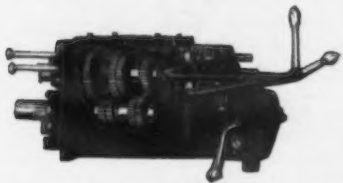
## **VERTICAL TURRET LATHES**

in 24 inch, 36 inch, 42 inch, 54 inch, 64 inch sizes  
afford the maximum return per dollar of investment  
for the following reasons:



**TABLE SPINDLE**

Spiral Drive with flood lubricated bearing of ample surface to resist heavy loads with maximum rigidity and minimum wear.



**PRIMARY SPEED  
CHANGE GEARS**

Alloy steel spur gearing with speed change clutch and brake levers extended to convenient position, permitting easy and rapid changes from operator's location.

### **Universally Adaptable**

Only proved engineering principles peculiar to the requirements of chucked work are embodied in their individualistic design, affording the same major advantages for each given size of machine tool; such as centralized control, variety of independently available feeds for both main and side heads, full range of selective speeds, extreme flexibility of tooling, and broad capacities for varying sizes and shapes of work.

### **Profitably Productive**

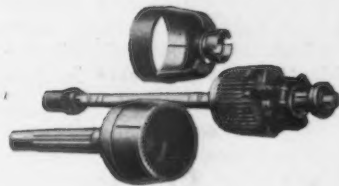
They make fullest use of productive time for actual cutting operations because they perform multiple operations simultaneously, are economical of set-up time, function rapidly at maintained accuracy, and require the least operating effort.

**"CUTTING TIME BETWEEN CUTS"**  
is yours for the asking

Contains fully detailed information, including specifications of all sizes of Bullard Vertical Turret Lathes. Mailed promptly upon request. Write now.

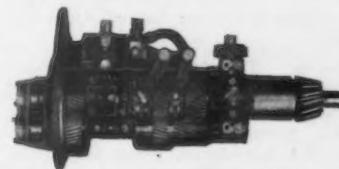
**THE  
BULLARD  
COMPANY**

**BRIDGEPORT  
CONN.**



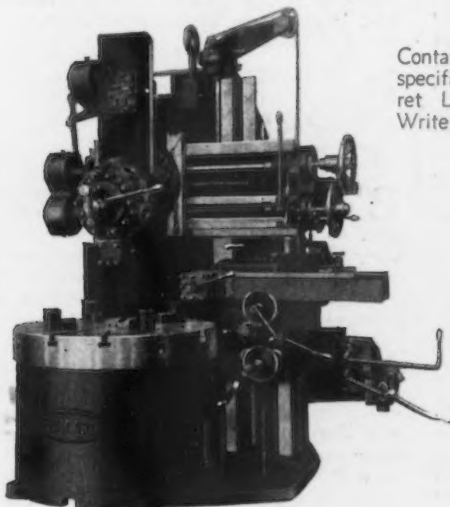
**MULTIPLE DISC CLUTCH  
AND BRAKE DRUM**

New design, adjustable, positive acting, multiple disc clutch and brake unit permitting easy, positive starting and stopping, and having extremely long life.



**SECONDARY SPEED  
CHANGE GEARS**

Spiral Drive gear train of selected alloy steel with ample capacities for heavy duty service.



**FRONT VIEW BULLARD  
VERTICAL TURRET LATHE**



**REAR VIEW SHOWING  
MOTOR MOUNTING**



interest in closing than heretofore. Most manufacturers are looking forward to a better demand for machine tools in the fall. Efforts to close on inquiries previously quoted have met with refusals because of present industrial conditions, although buyers indicate that when business does improve, they will be ready to take on new equipment.

## MILWAUKEE

In view of the fact that industrial construction generally is at low ebb, opportunities for volume business remain lacking, and business is sustained only by urgent replacement needs. Better inquiry from automotive shops continues, but caution in placing orders is evident in the hesitancy to act upon estimates and quotations. Indications are that August will not develop a much greater volume than did June or July, but a pickup of at least some significance is confidently expected early in September.

## New York

**S**IGNAL Supply Officer, Army Base, Brooklyn, is asking bids until Aug. 11 for 250 bell mechanisms, 330 gongs and 250 posts.

Empire Sign Co., 201 East Twenty-ninth Street, New York, manufacturer of signs and displays, has leased one-story building at Long Island City for expansion.

Continental Television Corp., New York, care of E. Girard Schmidt, head of E. G. Schmidt & Co., 100 William Street, insurance, recently organized by Mr. Schmidt and associates, plans establishment of plant at Newark, N. J., for manufacture of television equipment, including parts and assembling departments. Company has acquired controlling interest in Radio Technic Laboratory, Inc., manufacturer of radio and television apparatus, and will consolidate. Mr. Schmidt is secretary and treasurer of new company; Joseph Leopold, formerly president of Consolidated Instrument Co. of America, Inc., New York, is president.

Department of Correction, State Office Building, Albany, N. Y., is asking bids until Aug. 4 for construction of an electric transmission line for power service at Clinton Prison and Dannemora State Hospital, Dannemora, N. Y. Walter N. Thayer, Jr., is commissioner of department.

Navy Purchasing Office, New York, is asking bids until Aug. 4 for a motor-driven lathe, knife blades and other equipment for Naval Supply Depot, Brooklyn.

James M. Dickson, R.F.D. 3, Schaghticoke, N. Y., and associates have organized Hicks Helicopter, Inc., Mechanicville, N. Y., and will operate plant at last-named place for manufacture of airplane equipment and other apparatus. David C. Huntington, 2 South Main Street, Mechanicville, is interested in new company.

Robert Gair Co., 420 Lexington Avenue, New York, manufacturer of corrugated and fibre containers, etc., has se-

cured a substantial interest in Maritime Paper Products, Ltd., Halifax, N. S., manufacturer of kindred products. Last-named company has recently completed plant totaling about 30,000 sq. ft. of floor space. E. Victor Donaldson, president of Robert Gair Co., has become member of board of Maritime company.

Westchester County Sanitary Sewer Commission, Court House Annex, White Plains, N. Y., has plans for a joint sewage treatment plant at Yonkers, N. Y. Project will cost over \$400,000. W. W. Young, address noted, is consulting engineer.

Township Committee, Denville, N. J., will receive bids until Aug. 7 for erection of 350,000-gal. tank for new water supply system.

General Electric Co., Lawrence Street, Bloomfield, N. J., has asked bids on general contract for a one-story addition, to cost about \$35,000 with equipment.

National Machinery & Equipment Co., 45 Mechanic Street, Newark, has leased part of building at 2-16 Liberty Street, for expansion in storage and distributing department.

H. Rotman & Co., 35 Prince Street, Newark, manufacturers of refrigerators, show cases, butchers' fixtures, etc., have acquired two-story and basement building at 185-87 Camden Street, on site 60 x 100 ft., and will remodel for a new plant.

Passaic Valley Water Commission, 156 Ellison Street, Paterson, N. J., is asking bids until Aug. 3 for three 600-kw. fixed-blade turbine-generator units and for one 600-kw. automatically adjusted blade generator unit. Fuller & Everett, 25 West Forty-third Street, New York, are engineers. Bids will be asked until Aug. 10 for a power substation, including transformers, busses and accessory equipment; 24-panel switchboard, with instruments; 50 a.c. motors; cables, etc., and complete transmission line for power supply.

Morris Township Board of Education, Morristown, N. J., has authorized installation of manual training equipment in addition to Vail school, to develop a junior high school, to cost about \$125,000. Bids have been asked on general contract.

Bennett Insured Steel Treating Co., Newark, has been organized with capital of \$125,000 to take over and expand company of same name with plant at 310 Adams Street. Wilbur R. Bennett and Cecil Francis head new organization.

Borough Council, Bernardsville, N. J., plans installation of pumping machinery and other power equipment, conveying machinery, etc., in connection with new sewage disposal plant, entire project to cost about \$200,000. Clyde Potts, 30 Church Street New York, is engineer.

## New England

**B**OARD of Trustees, Yale University, New Haven, Conn., has taken out a permit for an addition to power house, to be used primarily for a tool house and mechanical shop, to cost about \$25,000 with equipment.

Merrimac Chemical Co., Everett, Mass., manufacturer of industrial chemicals, has awarded general contract to John Griffin Co., Inc., 250 Stuart Street, Boston, for a two-story and basement addition,

to cost about \$60,000 with equipment. Company has work in progress on other unit and will soon concentrate production at Everett works, discontinuing manufacture at Woburn plant.

Central Maine Power Co., Water Street, Augusta, Me., has arranged for a bond issue of \$2,000,000, part of proceeds to be used for extensions and improvements in plants and system.

Edwin A. Briggs, 145 Dickinson Street, Springfield, Mass., and associates have organized Perfect Hemstitcher Mfg. Co., and plans operation of local factory for production of textile machine specialties and parts. J. Delano Bartlett, Springfield, is interested in new company.

School Committee of City Council, Providence, R. I., plans installation of manual training equipment in new senior high school to cost over \$300,000. Fund of \$25,000 has been authorized for preparation of plans by Commissioner of Public Buildings, who will be in charge.

A. W. Osberg, 795 Elm Street, Manchester, N. H., architect, has revised plans for one-story and basement automobile service, repair and garage building, 110 x 175 ft., to cost about \$80,000 with equipment.

J. A. Merson & Son, Inc., Bridgeport, Conn., care of D. E. Birnbaum, 90 Poplar Street, recently organized by Mr. Birnbaum and associates with capital of \$25,000, plans operation of local works for manufacture of iron and steel specialties.

Grafton Power Co., Grafton, Vt., will dispose of bond issue of \$20,000,000, part of fund to be used for expansion and improvements, including transmission lines. Company operates a hydroelectric power plant at Fifteen Mile Falls, N. H., recently placed in service.

Samson Electric Co., Canton, Mass., manufacturer of electric alarms, batteries, radio equipment, etc., is moving its branch plant at Watertown, Boston, to Canton, where production will be concentrated in future. Increased capacity will be arranged at Canton plant.

Lander Welding Co., 164 Exchange Street, Malden, Mass., is building a one-story addition. New equipment will be purchased.

Higgins Classical Institute, Charleston, Me., has closed bids on a power house and coal pocket. Carl Herrick, Bangor, Me., is chairman of board of trustees.

## Buffalo

**B**UILDING permit has been taken out by A. F. Oliver Gear & Machine Co., Inc., 60 Cherry Street, Buffalo, for one-story plant unit, 85 x 250 ft., to cost over \$75,000 with machinery. Edward B. Green & Son and Albert H. Hopkins, 1 Niagara Square, are architects.

International Business Machines Corp., Endicott, N. Y., manufacturer of adding, calculating and other machines and parts, has acquired three plots near plant and will use a portion of site for a four-story and basement addition, 50 x 56 ft., to cost about \$100,000. Charles H. Higgins, 101 Park Avenue, New York, is architect and engineer.

Morton F. Slater, 834 Humboldt Parkway, Buffalo, and associates have organized Bison Iron Works, Inc., and will operate local plant for manufacture of iron and steel products. Walter Zachary,



# Control

—the very name implies a directing of power . . . a mastery of operation. *Control*—serving as an industrial agent, is dependent upon none other than mechanical or human direction. A gigantic press, hydraulic in principle, registers its action by *valve control*, the human element of which—enters not so much into its manual operation as in its design.

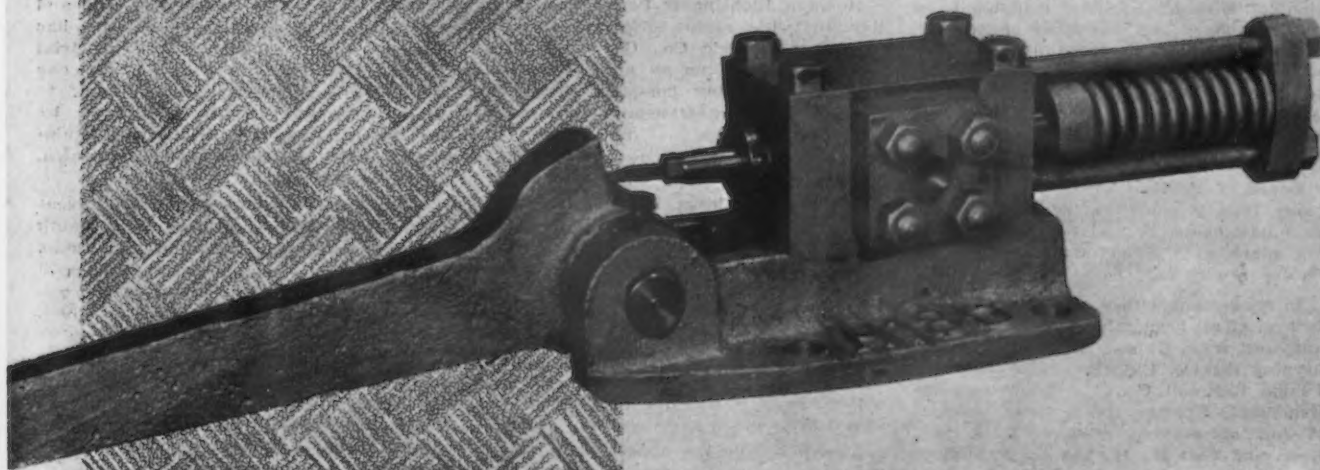
Birdsboro valves—*hydraulic operating, high pressure stop valves, poppet type, high pressure check valves, pressure relief or shock valves*, are all designed with a full knowledge of their field . . . their manufacture shares the atmosphere of mammoth presses in erection. We have these reasons to believe you content with our product.

## BIRDSBORO

STEEL FOUNDRY AND MACHINE COMPANY

DESIGNERS AND BUILDERS

BIRDSBORO, PENNSYLVANIA



222 Goodyear Avenue, and Stanley M. Zachary, 153 Miller Avenue, are interested in new company.

Bloedel Mfg. Co., Buffalo, recently organized by Phillip B. Bloedel, 134 Ruhland Avenue, and associates, has taken over property on East Ferry Street and will establish plant for manufacture of tools, dies, metal stampings and kindred specialties. Mr. Bloedel will be president and manager; he was formerly general manager of Buffalo Tool & Stamping Co., and president of Mignon Electric Corp., both with local plants.

Board of Education, Genesee Building, Buffalo, will receive bids until Aug. 4 for manual training equipment, laboratory furniture and supplies, science equipment and supplies, electrical equipment, lockers, etc., for Grover Cleveland High School. Bureau of School Architecture, address noted, is in charge. James Storer is secretary.

## St. Louis

**F**OLLOWING recent organization, Tiffany Castings Co., St. Louis, has established a foundry in former building of Tiffany Aluminum Products Co., Branch and Buchanan Streets, for production of light castings. Company is affiliated with Chaplick Machine Works, 732 Mather Street, Chicago, Zigman Chaplick being head of both organizations. Last-noted company contemplates establishment of machine works at St. Louis in conjunction with Tiffany plant.

State Board of Affairs, Capitol Building, Oklahoma City, W. C. Hughes, chairman, has asked bids on general contract for a new power plant at Western Oklahoma State Hospital, Supply, Okla., to cost about \$85,000 with equipment. Layton, Hicks & Forsyth, Braniff Building, Oklahoma City, are architects.

Arkansas Power & Light Co., Little Rock, Ark., has arranged for a bond issue of \$2,000,000, part of proceeds to be used for extensions and improvements.

Common Council, Cassville, Mo., plans installation of deep-well pumping machinery and auxiliary equipment in connection with extensions and improvements in municipal waterworks. Shockley Engineering Co., Graphic Arts Building, Kansas City, Mo., is consulting engineer.

Greeley County Board of Education, Tribune, Kan., is considering installation of manual training equipment in new two-story and basement community high school to cost about \$130,000, for which general contract has just been let to Conner Construction Co., 916 North Amidon Street, Wichita, Kan. S. S. Voigt, 522 South Lawrence Street, Wichita, is architect.

Board of Public Works, Topeka, Kan., plans installation of a traveling crane in a new one-story and basement pumping plant at Oakland Station. W. E. Baldry is city engineer.

In connection with a program for conversion of all locomotives operating south and west from Kansas City, Mo., for oil-burning service, Chicago, Rock Island & Pacific Railroad Co., 179 West Jackson Boulevard, Chicago, plans establishment of fuel oil stations between Herington, Kan., and Fort Worth, Tex., and between Kansas City and Tucumcari, N. M. More than 225 locomotives will be equipped as oil burners, work to be carried out in

company shops at Kansas City and vicinity.

Plans are under way by F. Komnick Maschinenfabrik, Elbing, Germany, for a new plant at Festus, Mo., for manufacture of building and paving brick under process now used at Elbing works, to cost about \$100,000 with machinery. An affiliated American interest is being organized under direction of Albert Seelig, Festus, to carry out project; Mr. Seelig will be vice-president.

## Gulf States

**B**IDS have been asked on general contract by Dixie Glass Bottle Mfg. Co., New Merchants Bank Building, Jackson, Miss., for new one-story plant, 55 x 275 ft., for hollowware production, to cost close to \$100,000 with machinery.

Magnolia Pipe Line Co., Dallas, Tex., operated by Magnolia Petroleum Co., same place, both subsidiaries of Standard Oil Co. of New York, has begun erection of new bulk oil storage and distributing plant at Center, Shelby County, to handle output from east Texas oilfields, to cost over \$250,000 with pumping and other machinery.

Dumas Independent School District, Dumas, Tex., W. W. Burnett, president, plans installation of manual training equipment in new two-story high school, for which general contract has just been let to Underhill Construction Co., Amarillo, Tex., to cost about \$160,000. Guy A. Carlander, Fisk Medical and Professional Building, Amarillo, is architect.

Central Refining Co., Henderson, Tex., is completing new oil refinery on site recently acquired to north of city, to cost close to \$200,000.

Orleans Levee Board, New Orleans, A. L. Shushan, president, has engaged National Airport Engineering Co., Scofield Building, Cleveland, to prepare plans for initial work at Shushan airport, including hangars, repair and reconditioning shops, administration building and other field units, to cost about \$1,500,000 with equipment. Other expansion will be carried out later to more than double amount noted. John Klorer is chief engineer of Levee Board.

Consolidated School District of Jackson Parish, Jonesboro, La., has voted fund of \$125,000 for new local high school and plans installation of manual training equipment.

Houston Lighting & Power Co., Houston, Tex., has arranged for purchase of Galveston Electric Co., Galveston, Tex., and will operate as an affiliated organization. Acquiring company plans expansion, including transmission lines between two systems.

City Council, Dallas, Tex., has authorized purchase of about 90 acres of additional land adjoining Love Field municipal airport for expansion, including erection of new field units. A fund of \$300,000 has been arranged for project. J. N. Edy is city manager.

Gregg Oil Co., Abilene, Tex., J. C. Hunter, president, is planning oil storage and distributing plant at Gladewater, Tex., in east Texas oilfield district, and will build pipe line for supply, to cost about \$40,000.

August C. Richter, Laredo, Tex., plans installation of conveying machinery and other equipment in new citrus fruit packing plant, on which work will begin about

middle of August, to cost close to \$20,000 with equipment.

Solid Carbonic Corp., Nells-Esperson Building, Houston, Tex., recently organized, is planning erection of two new dry ice-manufacturing plants at Houston and at point near San Benito, Tex., to cost more than \$250,000 with machinery. Company has acquired assets of Dry Cold Corp., which has plants at Fort Worth, Tex., and New Orleans, and will continue in service. W. D. Ward is secretary and treasurer.

C. A. Gaigle, 825 Mobile Avenue, Port Arthur, Tex., is at head of project to establish a local plant for manufacture of a patented folding bed. A company will be organized to carry out enterprise. J. W. O'Neal is interested in project.

## Philadelphia

**S**PACE in factory at Eleventh Street and Washington Avenue, Philadelphia, has been leased by Metal Specialties Co., Philadelphia, recently organized, for manufacture of metal novelties and allied products.

Reading Co., Reading Terminal, Philadelphia, has awarded general contract to F. V. Warren Co., Lewis Building, for one-story mechanical and repair shop to cost about \$50,000, for use in connection with line electrification program.

E. J. Rutherford & Co., 1110 Shackamaxon Street, Philadelphia, laundry equipment and supplies, have leased building at 1111-15 South Seventeenth Street, for new storage and distributing plant.

Philadelphia Gas Works Co., 1401 Arch Street, Philadelphia, has taken out a permit for a new artificial gas storage and distributing holder, to cost over \$150,000 with equipment.

Corrugated Container Co., Trenton Avenue and Venango Street, Philadelphia, manufacturer of corrugated cardboard containers, boxes, etc., has leased floor in building at Erie Avenue and Sepviva Street for expansion.

Mackenzie Mfg. Corp., Philadelphia, recently organized by Franklin H. Mackenzie, 318 Bayard Road, Bywood, Pa., and associates, with capital of \$20,000 and 100 shares of common stock, no par value, plans operation of local works for manufacture of industrial chemicals, etc. M. Gilbert Herbach, 2134 North Eleventh Street, will be treasurer.

Repp Orchard Products Co., Broad and Grove Streets, Glassboro, N. J., has awarded general contract to Industrial Construction Co., Philadelphia, for one and three-story fruit-canning plant, to replace factory recently destroyed by fire, to cost close to \$100,000 with equipment. Louis H. Goettelman, Brooklawn, N. J., is architect.

Hamilton Township Board of Education, High School, Rowan and South Clinton Avenues, Hamilton Township, near Trenton, N. J., is asking bids until Aug. 5 for a cast iron boiler, grates, etc. Herman L. Mack, 2428 Liberty Street, Hamilton Township, is architect.

Pennsylvania Power & Light Co., Allentown, Pa., will remodel and improve its artificial gas-manufacturing plant at Tamaqua, Pa., with installation of equipment for using anthracite coal for fuel, instead of coke, as heretofore.

Colonial Knitting Mills, Inc., B and Clearfield Streets, Philadelphia, plans



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used—development in Sharon Mills of a steel of proper characteristics, chemically and physically, to meet all the exacting demands of fabrication. Consistent uniformity in quality, with reduction of failures to a minimum, was the manufacturer's gain in this instance. ▼ Give your steel sheet or strip product a "Sharon Specifications" examination. It may mean improved quality, plus savings in production. It will certainly insure the proper steel for the purpose. Write for further details about this valuable service. SHARON STEEL HOOP CO.—SHARON, PA.

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**SAVE WITH STEEL**





erection of steam power house at new mill at Cape May Court House, N. J., entire plant to cost over \$150,000.

Filler Machine Co., Inc., 1246 Montgomery Street, Philadelphia, manufacturer of canning machinery, parts, etc., has asked bids for a one-story addition, 50 x 54 ft., to cost close to \$25,000 with equipment.

Board of Education, Souderton, Pa., contemplates installation of manual training equipment in new high school, for which bids have been asked on general contract, to cost over \$150,000. Charles M. Talley, Souderton, is architect.

Wilkening Mfg. Co., Seventy-first Street and Kingsessing Avenue, Philadelphia, manufacturer of piston rings, etc., has awarded general contract to Golder Construction Co., Market Street National Bank Building, for plant alterations and improvements.

## Chicago

CITY Council, Mounds, Ill., is considering erection of an electric light and power plant in connection with extensions and improvements in municipal waterworks, latter to include new electric-operated pumping plant, elevated steel tanks and other equipment. Entire project will cost about \$130,000. Russell & Axon, 6200 Easton Avenue, St. Louis, are consulting engineers.

Sureline Mfg. Co., 4248 Chicago Avenue, Chicago, recently organized, plans operation of local factory for manufacture of hardware specialties. Ernst Kahn and John Filko are heads.

Board of Education, Shelby, Mont., contemplates installation of manual training equipment in new two-story and basement high school, to cost about \$125,000. Kees & Bowstad, Plymouth Building, Minneapolis, are architects.

Northern Power & Light Co., Ellendale, N. D., is planning extensions and improvements in transmission line from Frederick to Ellendale, with new lines to Forbes, N. D., and vicinity, and power substation at Ellendale, to cost about \$60,000.

Board of Education, Peoria, Ill., plans installation of manual training department in new two and three-story junior high school, to cost about \$750,000, for which bids will be asked on general contract in about 30 days. Howitt, Emerson & Gregg, Peoria Life Building, are architects.

Great Northern Railway Co., Railroad Building, St. Paul, Minn., has awarded general contract to Burrell Engineering & Construction Co., 1 North Canal Street, Chicago, for addition to grain elevator at Sioux City, Iowa, to cost about \$100,000. H. S. Loeffler is company engineer, address noted.

Capitol Iron & Metal Co., 1428 Second Street, St. Paul, Minn., is planning to rebuild part of plant recently destroyed by fire, with loss of about \$40,000 including equipment.

Great Lakes Pipe Line Co., Kansas City, Kan., is considering new pumping plant in connection with oil pipe line system near Roland, Iowa, to cost about \$180,000 with machinery.

Illinois Wire & Mfg. Co., Joliet, Ill., is establishing a branch factory, 28 x 72 ft., in Council Bluffs, Iowa, with investment

of \$25,000 in plant and site. Portable silos, grain bins, corn cribs and snow fences will be manufactured. M. Welch, formerly with Joliet plant, will be manager.

## Pittsburgh

CONTRACT has been let by Standard Oil Co. of Pennsylvania, Peoples Gas Building, Pittsburgh, to A. Wishart & Sons Co., Sharon, Pa., for new bulk oil storage and distributing plant at Sharon, to cost about \$75,000 with equipment.

James A. Wetmore, supervising architect, Treasury Department, Washington, is asking bids until Aug. 5 for boilers, stacks, etc., for United States marine hospital at Pittsburgh.

Pittsburgh-Marmon Co., Pittsburgh, recently organized to represent Marmon automobile in this district, has established temporary offices at 5847 Center Avenue. Company plans early establishment of new service, repair and sales building, with mechanical and parts departments, etc.

Old Witch Co., Inc., 122 East Forty-second Street, New York, manufacturer of ammonia, with main plant at Brooklyn, is planning establishment of a branch plant at Washington, Pa., to cost over \$75,000 with equipment.

Board of Directors, Munhall School District, Munhall, Pa., is planning installation of manual training equipment in new three-story and basement junior high school to cost about \$225,000, for which bids have been asked on general contract. A. G. Wickersham, 135 East Eighth Street, Homestead, Pa., is architect.

City Controller, City-County Building, Pittsburgh, will receive bids until Aug. 3 for meter and meter parts for Bureau of Water for five years. Specifications at office of Department of Supplies, address noted.

Page Steel & Wire Co., Monessen, Pa., a unit of American Chain Co., Bridgeport, Conn., has secured a contract from American Cable Co., 230 Park Avenue, New York, for special steel wire for use on Golden Gate bridge, San Francisco, for which American Cable Co. has cable and wire contract. Page company plans increased operations at Monessen and will give employment to about 100 additional men. Order is expected to require about 12 months to fill and totals \$6,250,000. Main cables and suspension steel ropes will be fabricated at plant of American Cable Co.

## Cleveland

BIDS will be asked at once on general contract by National Milling Co., 2221 Front Street, Toledo, Ohio, for rebuilding part of grain mill and elevator recently destroyed by fire, with loss of about \$150,000 including equipment. Company is an interest of National Biscuit Co., 449 West Fourteenth Street, New York, and architectural and engineering department of last-noted company is in charge of work.

Pennsylvania & Ohio Power Co., Youngstown, a subsidiary of Ohio Edison Co., same address, has acquired about 47 acres adjoining steam-operated electric

power plant at Toronto, Ohio, and plans erection of two additional units to double present capacity, to cost about \$3,000,000 with transmission system. Expansion program will require close to 36 months for completion.

Combustion Equipment Manufacturers, Inc., Cleveland, care of Treadway & Marlatt, Union Trust Building, attorneys, recently organized by R. G. Morrison and B. H. Davis, plans operation of local plant for manufacture of steam power equipment and engineering specialties.

Dick Brothers, Inc., Third and Buttonwood Streets, Reading, Pa., manufacturer of brass and other metal castings, plumbers' brass goods and art metal products, has acquired plant and property of Seville Co., Cleveland, manufacturer of kindred metal products. Purchasing company will consolidate and plans removal of Cleveland plant to Reading, where production will be concentrated and expanded.

New interests, headed by G. A. Funkhouser and J. E. Foster have leased plant of Alliance Aircraft Corp., Alliance, Ohio, defunct. Company will be organized to take over property which will be used for production of all-metal airplanes, including parts manufacture and assembling. New company also proposes to secure production rights for Warrior motor, developed by Alliance Aircraft organization.

Roofing & Sheet Metal, Inc., Youngstown, care of Barnum, Hammond, Stephens & Hoyt, Youngstown, attorneys, lately organized by W. L. Leedy, Youngstown, and associates, plans operation of local works for production of sheet metal goods.

## Detroit

BOARD of Trustees, Institution for Deaf, Flint, Mich., has asked bids on general contract for a training school unit, including three-story mechanical and industrial shop, to cost about \$160,000. Mackenzie & Pratt, Flint, are architects.

Evans Products Co., Union Guarantee Building, Detroit, manufacturer of automobile loading equipment, etc., is considering erection of plant near Tampa, Fla., for production of citrus fruit shipping crates of new type. Initial plant will cost over \$200,000 including machinery. Ultimate works are expected to cost over three times that sum.

Independent Gas Cock Co., Jonesville, Mich., manufacturer of brass goods, forged products, etc., has acquired former plant of Burwood Products Co., Port Huron, Mich., for new works and will remove to new location and increase capacity.

General Electric Supply Corp., 415 East Congress Street, Detroit, a subsidiary of General Electric Co., has purchased four-story building at East Jefferson and McDougall Avenues, and will remodel for new storage and distributing building. General contract has been let to Albert A. Albrecht Co., Penobscot Building, for alterations and improvements. Same contractor has work under way for a new multi-story factory branch, service and distributing plant, 80 x 160 ft., for General Electric Co., at Third and York Streets, to cost about \$250,000 with equipment.

Non-Ferrous Alloys Co., Detroit, has been organized with capital of \$10,000 to take over and expand plant and business

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## ACCURATE DUPLICATE THREADS *with the* **“BIKEKO”**

A positive lock on the screw adjustment of this decidedly new die-head assures the same size threads on every pipe of a lot. The fine pitch adjusting screw gives very accurate control of the adjustment for both standard and special sizes.

Very high cutting speeds are obtained through the use of curved eccentric relief on the high speed steel dies, reducing the friction, facilitating disposal of chips, etc. Following best practice, the cutting edge is well ahead of the center line.

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Notice particularly the ease of changing from one size to another—simply insert one screw in the proper hole. A memo of the final adjustment of the fine adjusting screw enables the operator to secure identical threads promptly.

The “BIKEKO” can be furnished on new Peerless and P.D.Q.C. machines and for any heavy power driven threading machine now in service.

Do not fail to investigate this important improvement in threading equipment.

**BIGNALL & KEELER MACHINE WORKS**  
*of the N. O. Nelson Manufacturing Co.,* EDWARDSVILLE, ILLINOIS



of company of same name, with works at 6425 Charlevoix Street. New company will also engage in machine work. It is headed by Harold H. Harwood and Edward J. Thome.

Marvel Carburetor Co., Flint, Mich., manufacturer of carburetors and kindred automobile equipment, has acquired plant and business of Wheeler-Schebler Carburetor Co., Inc., 1302 Barth Avenue, Indianapolis, manufacturer of kindred products, and will consolidate. It is proposed to concentrate production largely at Flint.

White Star Refining Co., 903 West Grand Boulevard, Detroit, has awarded general contract to W. S. Pocock & Co., 1726 Seward Street, for addition to works at Trenton, Mich., primarily for production of greases and lubricating oils, to cost over \$40,000 with equipment.

Chrysler Corp., 341 Massachusetts Avenue, Detroit, has plans for an addition to plant of its DeSoto and Plymouth motor car divisions, 10060 Mount Elliott Avenue, totaling about 30,000 sq. ft. floor space, to cost close to \$100,000 with equipment. Unit will be ready for occupancy early in September.

Village Council, Genesee, Mich., is planning installation of elevated steel tower and tank for water supply system in connection with extensions and improvements to cost about \$35,000. George H. Ruhling Co., Lawyer Building, Detroit, is engineer.

Mechanical Handling Systems, Inc., Detroit, manufacturer of conveyors and power-in-transit trucks, has awarded Austin Co., Cleveland, contract for a new plant to replace company's present plant at 3454 Denton Street. Structure will be 90 x 160 ft., one story, and cost \$100,000.

## South Atlantic

PLANS have been filed by Arundel-Brooks Concrete Co., Baltimore, recently organized, for new pre-mixed concrete plant at Wolfe and Fell Streets, where tract, 235 x 648 ft., recently was acquired. New plant will consist of several units, with concrete and steel bins, conveying and other mechanical-handling equipment for raw materials, etc., to cost about \$50,000. W. B. Brooks, Jr., is president.

J. H. Privott, 110 East Indian River Road, Norfolk, Va., and associates have organized Old Dominion Foundry, Inc., with capital of \$40,000, and plans operation of foundry for production of iron and other metal castings.

Bureau of Yards and Docks, Navy Department, Washington, will receive bids until Aug. 12 for a cross-compound, steam-driven air compressor, with capacity for compressing 5000 cu. ft. of free air a min. to gage pressure of 100 lb. a sq. in., for Norfolk Navy Yard.

Campbell Metal Window Corp., Hamburg Street, Baltimore, a subsidiary of American Radiator & Standard Sanitary Corp., 40 West Fortieth Street, New York, has become affiliated with Maxim Silencer Co., Hartford, Conn., through acquisition by parent organization, and will manufacture new products in conjunction with Maxim organization, including an air filter unit, room-silencing device to be known as Maxim-Campbell silencer, and other specialties. Expansion is being carried out at Baltimore plant.

Interstate Granite Corp., 607 West Seventh Street, Charlotte, N. C., R. E. Scoggins, president, is planning new stone and granite-working plant, with main unit one story, 40 x 250 ft., for cutting, sawing, finishing, polishing, etc. A steam power house also will be built. Program will cost close to \$90,000 with equipment.

Wayne Agricultural Works, Goldsboro, N. C., manufacturer of plows and other agricultural implements, plans rebuilding foundry recently damaged by fire, with loss of more than \$75,000 including equipment.

Warren Co., 905 Fair Street, S. E., Atlanta, Ga., manufacturer of paints, varnishes, etc., has plans for a new three-story plant, 60 x 80 ft., and will remove to new structure, with installation of grinding and other equipment for increased capacity. Present factory will be occupied as soon as vacated by Larkin-Warren Refrigerator Corp., now at 915 Fair Street, S. E., manufacturer of refrigerators, ice counters for butcher shops, etc., which will expand output at new location.

City Council, Cornelia, Ga., plans installation of pumping machinery and other power equipment, also chemical-treatment plant in connection with extensions and improvements in municipal waterworks and sewage system to cost \$75,000. Robert & Co., Inc., Bona-Allen Building, Atlanta, Ga., is engineer.

General Purchasing Officer, Panama Canal, Washington, is asking bids until Aug. 7 for cable and wire, rigid steel conduit, conduit fittings, switches, bolts, rivets, and other mechanical and electrical supplies.

Consolidated Gas, Electric Light & Power Co., Lexington Building, Baltimore, is planning erection of one-story shop, primarily for transformer assembling and reconditioning, to cost close to \$20,000 with equipment.

Moller Motor Car Co., Hagerstown, Md., has received an order for taxicabs from a New York distributing company, totaling \$1,250,000 and will resume production at once at local plant, following a shut-down since last April.

## Milwaukee

DEPARTMENT of Agriculture, Washington, has rejected all bids received July 21 for erection of new United States Forest Products Laboratory at University of Wisconsin, Madison, and is receiving new bids until Aug. 11. J. P. Culen & Co., Janesville, Wis., was low bidder at \$859,607, but appropriation of \$900,000 must cover machinery and other equipment. Architects are Holabird & Root, Chicago.

Kinite Corp., foot of Park Place, Milwaukee, manufacturer of alloy castings and alloy rolled bars, has established branch plant at Fairmont, W. Va., to serve mold factory of Owens-Illinois Glass Co. and other users of special steel in East. Kinite Corp. also maintains plant at Toledo.

Bond Falls Hydro-Electric Co. is being organized by Harry A. Bond, 920 South Madison Street, Green Bay, Wis., to build two water power plants on middle branch of Ontonogan River near Ontonogan, Mich. Dams will be 900 and 350 ft. wide, respectively, with steel Tainter gates. Cost is estimated at \$250,000.

## Indiana

INDIANA State Highway Commission, State House Annex, Indianapolis, J. J. Brown, director, has awarded general contract to Mead Construction Co., Lemcke Building, for three-story automobile service, repair and garage building, 109 x 200 ft., for State motor trucks and cars, to cost about \$140,000 with equipment. Vonnegut, Bohn & Mueller, Indiana Trust Building, are architects and engineers.

Ovens, power equipment, conveying and other machinery will be installed in new plant to be built by Gutzwiller Baking Co., affiliated with Carl Gutzwiller & Sons, 1048 South East Street, Indianapolis, on site recently acquired. It will be 40 x 140 ft., to cost over \$65,000 with equipment.

Buffalo Mfg. Co., Inc., Indianapolis, recently organized by E. H. Lederer, 2145 East Riverside Drive, and associates, plans operation of local plant for manufacture of electrical equipment and devices. James Lederer, Indianapolis, is interested in new company.

Empire Tool Co. has moved its equipment from Dayton, Ohio, to plant formerly occupied by Chard Lathe Co., New-castle, Ind.

Factory additions and employment of about 100 additional persons will result from a reorganization of Melaun Mfg. Co., 144 East Morris Street, Indianapolis, maker of metal stampings and other metal products. Company has been recapitalized at \$100,000. Herman H. Melaun, who has been with organization 10 years, will continue as president.

## Cincinnati

BOARD of Education, 511 West Court Street, Cincinnati, Charles W. Handman, business manager, has authorized installation of manual arts department in new two-story and basement school in Bond Hill district, to cost about \$350,000, for which bids will soon be asked on general contract. Charles F. Cellarius, St. Paul Building, is architect; William E. Bodenstein, Second National Bank Building, is mechanical engineer.

Jackson Auto Parts Co., Jackson, Ohio, recently organized under direction of E. E. Eubanks, Jackson, with capital of \$10,000, plans operation of local factory for manufacture of automobile parts and equipment. Charles W. Todd and H. D. Gragg, Jackson, are heads.

Contracting Officer, Wright Field, Dayton, Ohio, is asking bids until Aug. 10 for one air compressor and one water brake for dynamometer; until Aug. 4 for 150 target assemblies.

Board of Education, Louisville, contemplates installation of manual training department in new multi-story junior high school on site formerly occupied by Masonic Widows and Orphans Home, to cost over \$175,000, for which plans have been authorized. Bids on general contract will be asked in fall. Samuel D. Jones, business manager, is in charge.

Board of Trustees, University of Cincinnati, Clifton Avenue, Cincinnati, has asked bids on general contract for a four-story physics and science building, to cost about \$400,000. Equipment will include steel laboratory furniture, balances and precision laboratory apparatus.



# NOW

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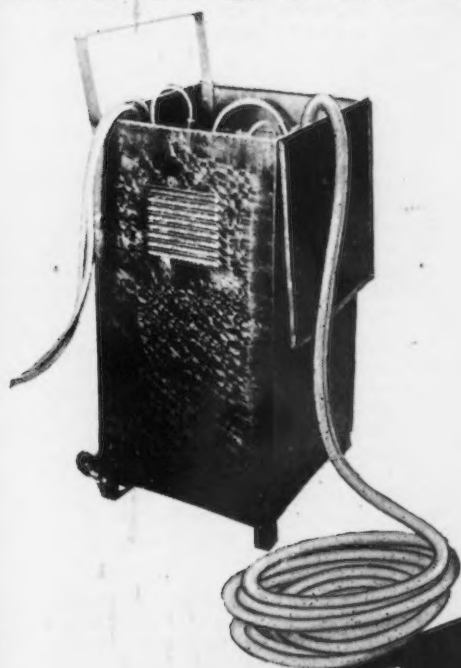
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## Business as Others See It Digest of Current Financial and Economic Opinion

**C**ONTINUED domination of the situation by conditions in Europe is noted by many writers. And as many express disappointment over the major developments from the London conference. *Annalist* refers to a distinct line of cleavage, however: "Conditions abroad can scarcely be said to have improved. . . . At home, on the contrary, various weekly indexes . . . indicate a substantial upturn in business activity."

While disclaiming any characterization of this movement as "marking the beginning of cyclical recovery from the depression, [it] is rather too general and vigorous to be ignored," says that paper. Steel and electric power, automobiles and car-loadings, all are credited with hopeful movements. And a few—a very few—of the second-quarter earnings statements show improvement. There has been another upturn in the *Annalist* weekly business index.

*Commerce and Finance* feels that "the pessimistic conditions which prevail overseas have been exaggerated in the interest of the would-be European borrowers." But for the fear of another war, says

Mr. Price, of that journal, "we would probably find ourselves in the midst of the greatest business revival ever known. All of the essentials for such a revival are here: Cheap money, abundant credit, adequate labor, eagerness to work, and an improved understanding of economic laws."

### Replacement Demand Seen

Numerous straws are pointing to better business conditions. Harvard Economic Society, which finds the foreign situation most serious, points to the great activity in shoe manufacturing and a recent advance of over 50 per cent in hide prices. This, while local to one industry and by no means sure to persist, gives point to Mr. Babson's remark that "no depression ever lasts longer than it takes to wear out two pairs of pants."

Replacement becomes important, therefore. Union Trust Co., Cleveland, reports that automobile equipment and accessories companies have profited from the large replacement demand for parts, occasioned by the larger number of old cars on the roads this year. The same is true as to tires.

Buying power being seen at the bottom, Silberling now looks for sustained recovery, but questions whether it will be of more than moderate proportions. "We can restore economic prosperity," says that service, "by . . . facing the fact honestly that a new and lower price level now prevails, and costs and selling prices must be adjusted to it. . . . The United States must find its way out by cheaper raw materials, efficient labor, fair but not extortionate wages and expansion of foreign exports of manufactures. This is an industrial problem, not a problem of tinkering with the money market."

Alexander Hamilton Institute says that we must get prices of manufactured goods closer to those of raw materials. "In 1921 the purchasing power of raw materials producers was restored by a recovery in raw materials prices accompanied by a further decline in the prices of finished goods." Present heavy supplies of raw materials give little hope of firming prices—hence "restoration of commodity price equilibrium will be chiefly dependent upon a further reduction in the prices of finished products."

Crowe & Schulte, 2436 Reading Road, are architects.

## Pacific Coast

**P**LANs are under way for extensions and improvements in power plant of Pacific Gas & Electric Co., 245 Market Street, San Francisco, at Redding, Cal., to cost close to \$50,000 with equipment.

United States Coast Guard Headquarters, Washington, has rejected bids recently received for hangar, 100 x 100 ft., at air base, Terminal Island, San Pedro, Los Angeles, and will ask new bids soon.

Albatross Steel Furniture Co., West Los Angeles, has plans for one-story addition, totaling about 40,000 sq. ft. floor space, to cost over \$70,000 with equipment. Francis D. Rutherford, Mills-Fraser Building, Santa Monica, Cal., is architect.

Parker Brick Co., Reno, Nev., recently organized by J. Y. Parker, head of Parker Brick Co. of California, Santa Barbara, Cal., plans erection of local brick-manufacturing plant, with steam power house and other structures, to cost over \$40,000 with equipment. E. E. Roberts, mayor of Reno, is vice-president of company.

Machinery Mart, Inc., 818 First Avenue South, Seattle, has awarded general contract to General Construction Co., Colman Building, for one-story storage and distributing plant, 80 x 200 ft., with mechanical shop and office, to cost about \$45,000 with equipment.

## Canada

**C**ITY of Three Rivers, Que., will erect waterworks pumping station for \$3,000,000 plant to be erected there for Canadian Industries, Ltd., for manufacture of cellophane.

Erie Resistor Corp., Erie, Pa., will establish a plant at 49 Bathurst Street, Toronto, to operate under name of Erie Resistor of Canada, Ltd., for manufacture of radio parts.

Construction work will be started at once on erection of waterworks pumping station in West Hamilton, Ont. W. L. McFaul is city engineer.

Bids are being received for erection of superstructure for filtration plant at Hamilton, Ont. Equipment will cost about \$985,000. W. H. Yates Construction Co., Ltd., 17 Main Street East, is general contractor.

veying, screening and other equipment. A commission has been appointed by Ministry of Public Works to prepare plans and carry out project. Same department is asking bids until Nov. 12 for a power dam on San Rogue River, near Cordoba.

Magdalena Syndicate, 29 Broadway, New York, affiliated with other American petroleum interests, is planning a development and expansion program on large tract of oil lands in northern part of Germany, recently acquired. Project will include sinking of wells, installation of oil rigs and erection of large oil refinery. A fund of over \$5,000,000 will be expended for work. Ernest Booth is chief engineer in charge.

Ministry of Public Works, Wellington, New Zealand, is asking bids until Aug. 25 for storage battery equipment for Mangahoe power scheme.

Talleres "Monterrey," S. A., metal construction, 70 Avenida Morelos, Mexico City, desire quotations and terms on a second-hand machine for milling column bases.

Ministry of Public Works, Warsaw, Poland, is arranging for group of electrical projects to develop complete electrification of country, including erection of hydroelectric generating plants, power substations, transmission lines and other work. It is proposed to expend about \$27,000,000 a year for more than 25 years to carry out project.

## Foreign

**M**INISTRY of Public Works, Buenos Aires, Argentina, has secured approval for erection of 604 grain elevators with capacities from 3000 to 5000 tons, located at different points along railroad lines in country serving grain districts. Units will include elevating, con-



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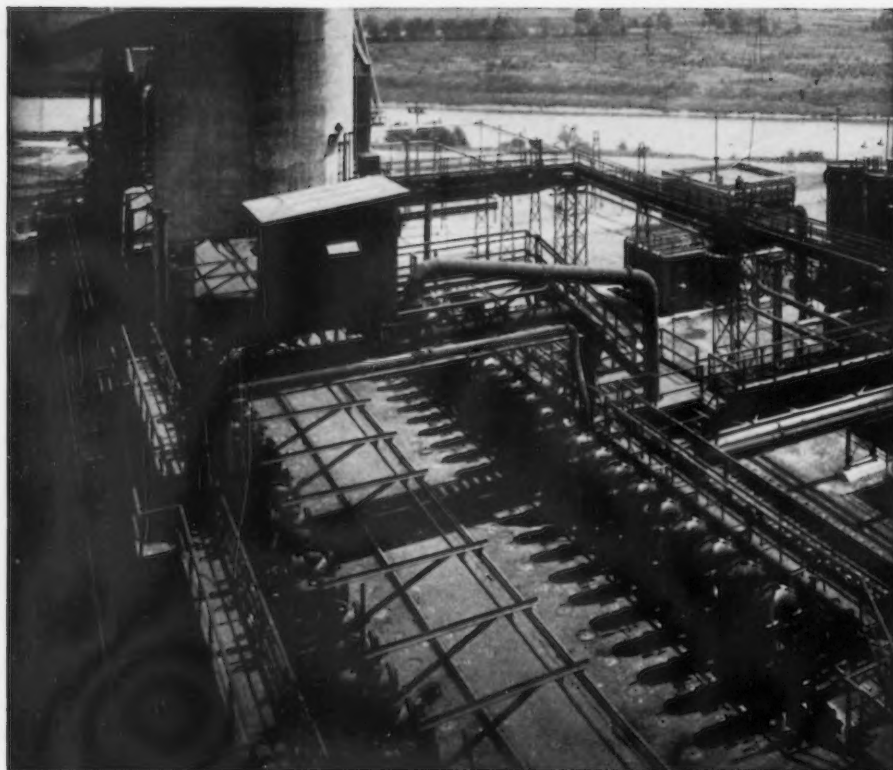
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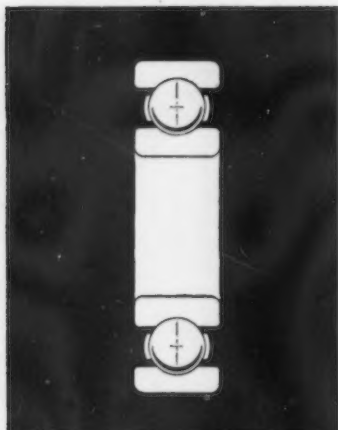
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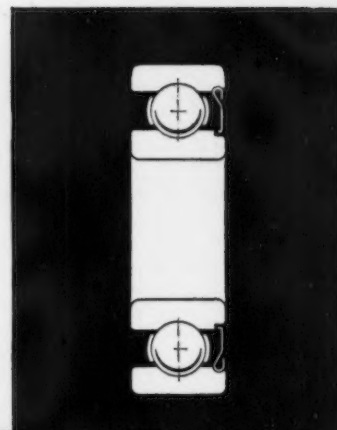
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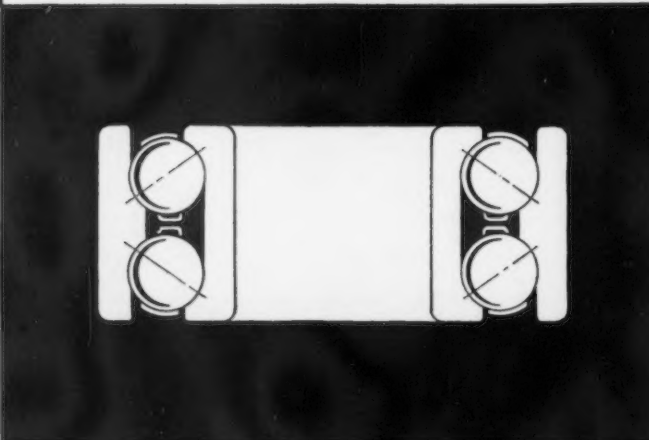


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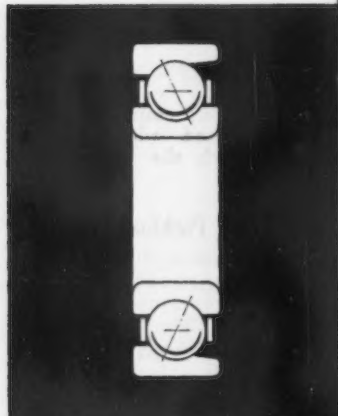
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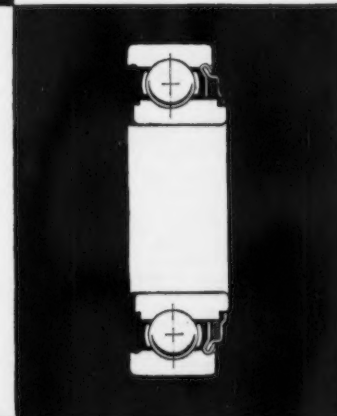


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